ETHICAL ISSUES IN HUMAN MOVEMENT RESEARCH

BY

STEPHEN CHRIS OLIVIER

THESIS

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Department of Human Movement Studies
Rhodes University
Grahamstown, South Africa

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ABSTRACT

In acknowledging past abuses of humans in research contexts, and recognising the potential for malpractices in Human Movement Studies (HMS), this study evaluated the extent to which ethical issues are addressed in the discipline. The primary method consisted of the standard techniques of philosophic analysis, with empirical data complementing the conclusions. In general, the study contends that insufficient attention is paid to ethical issues in HMS research. In response to a set of specifically constructed, ethically problematic research proposals, only 1.8% of comments from senior researchers advocated rejection of the proposals on ethical grounds. Also, a journal search indicated that consideration of ethical issues in published research may largely be absent. Questionnaire responses revealed that South African HMS departments may be deficient in terms of accountability towards ethical guidelines. Whilst noting the existence of utilitarian ethics in HMS research, it is advocated that deontologic principles should take precedence. Further, only a sound educative effort will produce improvements. In conclusion, this study advocates a deontology-based approach to research ethics. This is consistent with the contention that the use of humans in research is a privilege, and that the rights of participants ought to outweigh the desire of researchers to conduct research.

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CHAPTER I

INTRODUCTION

Recent decades have witnessed a dramatic increase in research in the holistic discipline of Human Movement Studies (HMS), with such research generally emanating from a positivist paradigm and having functional aims (Malloy et al. 1994). This is consistent with the view that research involving human participants is important to the development of new knowledge in a variety of areas, and is influenced by both improvements in technology and society's acceptance of a "progress imperative" view of science.

In the context presented above, research can be seen as critical and exhaustive investigation that seeks to discover new facts about human movement through systematic observation and experimentation. In the quest to satisfy the demand for knowledge, experimentation in HMS has become more invasive and potentially more injurious. This leads to one of the rationales for this dissertation, namely the recognition that potentially manipulative situations can lead to scenarios of conflict between free scientific inquiry and societal values (Bok, 1978). Specifically, the freedom to conduct research unhindered may clash with group and individual rights, or with other political and societal concerns.

Nevertheless, despite the fact that the links between free scientific inquiry and social stability have historically been tenuous, Western society in particular holds scientific research in much esteem. However, the very nature of research on humans means that it is not without risk, and particularly as a result of problems in the medical domain, ethical issues have recently exploded into the public consciousness.

Given the rise to prominence of political and social doctrines based on the principle of individual autonomy, concern has been expressed about whether

HMS research has embraced utilitarian or deontological ethical practices. It has been contended (Scocozza, 1989; Brodie and Stopani, 1990) that there is little doubt that utilitarian, consequence-based considerations dominate the ethical decision-making process in HMS experimentation, and this is supported by Olivier (1995; 1996). This then provided the primary broad impetus for this study, namely that of examining the nature, existence, and application of conflicting and complementary ethical systems in HMS research.

One of the reasons for public demands for the regulation of research has been the incidence of harm to participants. For example, the unprecedented cruelties administered by scientist-physicians during the Nazi reign in Germany led directly to the formulation of the Nuremberg code, and triggered the changes in how we currently view the involvement of human participants in research (Faden and Beauchamp, 1986). Subsequent responses to research abuses included the Declaration of Helsinki, which further advanced the notion that the interests of science and society should not take precedence over considerations relative to the wellbeing of research participants (Kroll, 1993). This was followed by the establishment of several regulatory bodies and policies, most notably in the United States of America (USA). These efforts, and the constantly growing regulatory bureaucracy of Institutional Review Boards (IRBs), highlight the rise to prominence of bioethics, and illustrate the extent of concern with ethical principles such as autonomy, and procedures such as the obtaining of valid informed consent.

Are the above concerns of relevance to HMS, where the large majority of researchers pursue tasks that can be described as benign? Cardon et al. (1976) for example conclude that the risk of participation in non-therapeutic research may be no greater than those of everyday life. Also, researchers could contend that even when there are significant risks, the integrity of the researcher and the existing avenues are sufficient to provide adequate protection. Put differently, it could be contended that both the intrinsic nature of HMS research, and the way

it is practised by professionals, do not predispose towards abuse of participants.

Preliminary investigation (Olivier, 1996) indicates that certain current research practices in HMS do not necessarily conform to the autonomy model required by, *inter alia*, codes such as the Declaration of Helsinki. Also, even if researchers do perceive danger in their experiments, they may embrace the utilitarian standpoint that the potential benefits are sufficient compensation. It is of course recognised that the very nature of research means that results cannot be pre-determined. Risk is thus inevitable if knowledge is to proceed. However, the point of departure for this study is that while progress is desirable and important, it is important to recognise that it is an optional goal rather than an imperative. This approach is consistent with Zelaznik's (1993) contention that the use of human subjects in research is a privilege, and the rights of research participants ought always to outweigh the desires of researchers to conduct research.

This study then sought to evaluate ethical issues and practices in HMS research. This was done under the broad framework of three major ethical principles (encompassing many other primary and secondary moral obligations and considerations), namely respect for persons, beneficence (including nonmaleficence), and justice. Respect for persons is possibly all-embracing and entails considerations of autonomy, such considerations leading to the practice of informed consent.

Informed consent has served partly to impose certain limits on researchers utilising human participants, but the primary aim of the procedure has been to protect the interests of those participants. The doctrine thus embraces the principle of autonomy under which are subsumed more specific principles such as the use of "captive" populations, coercion and sanction, knowledge and comprehension of procedures, confidentiality, deception, and cultural considerations.

Researchers in HMS and allied disciplines often recruit participants for their investigations from "captive" populations, such as students, tournament participants, and team members . Considerations of coercion and sanction apply here, particularly in authority/power situations, and in situations such as this the autonomy of participants is at issue. When allied to circumstances where there are doubts about the extent of knowledge and level of comprehension of participants, the issues concern not only how informed individuals are, but how free they are to determine their own futures. These considerations are particularly important when children are utilised in research, a common occurrence in HMS and allied disciplines. Factors such as confidentiality, privacy, veracity, fidelity, and cultural considerations also pertain to research practices falling under the framework of the autonomy model. A preliminary investigation (Olivier, 1996) indicated that some of the ethical principles mentioned above may be largely absent in HMS research, particularly in situations where the use of human participants requires, (according to commonly accepted research ethics practices) the presence of these principles. This then indicated the need for a multi-faceted investigation into ethical guidelines and practices in HMS research.

Further, it was deemed necessary to not only review the ethical decision-making practices of HMS practitioners, but also to consider the macro-structure in terms of accountability to Institutional Review Boards, ethical issues in research publication, and the provision for education in research ethics.

One of the products of the increasing concern with ethical issues in research has been the proliferation of IRBs. These committees have changed the face of research by requiring investigators to justify their research on humans to a peer review group prior to recruiting participants (Annas, 1991). IRBs serve to maintain ethical standards in research, to protect research participants from harm and exploitation, to preserve the rights of participants, and to provide reassurance to the public that the above objectives are being attended to (MRC, 1993). Are these noble aims being realised, particularly in HMS research? Firstly, there is

growing concern that the restrictive nature of IRBs, and the bureaucratic nature of their regulatory procedures, are not only retarding valuable research, but is in fact eroding confidence among scientists in the very ethic intended to govern human experimentation (Mosher, 1988; Pettit, 1992). Secondly, many types of HMS research may be technically exempt from ethics committee review, where such review is a legislated requirement in research contexts. Also, in South Africa, HMS research is not governed by legislation in respect of ethical review, with such review consequently being the optional responsibility of the investigator, supervisor, or institution. Given that investigators will probably tend to overestimate the benefits and underestimate the risks of their work (Kimmel, 1991) and that they are unlikely to successfully dissociate themselves from their work to act as an ideal ethical observer, it seemed desirable to examine the prevalence and practices of IRBs in HMS research.

Malloy (1992) contends that the current functionalist nature and orientation of HMS does not acknowledge the interpretive realm of ethics. The practical implication of this is that HMS students, whose future professional duties involve contact with others in a variety of situations, may not be adequately trained in ethical decision-making. Education is seen as critical, and Wright (1994) feels that universities should develop explicit research standards and promote these standards for faculty and graduate students. This echoes the contention of several authors (Faden and Beauchamp, 1986; Friedman, 1988; Malloy, 1992), the sentiment being that only a persistent educational effort can bring about real change in the practice of research utilising human participants. This then identified the need to review existing curricula in HMS with regard to ethical content and teaching methods, in an attempt to determine the extent (if any) to which education may influence ethical decision-making among professionals in the discipline.

NATURE OF THE PROBLEM

The problem addressed by this study was to review current ethical practices in HMS research. The primary method employed consisted of the standard techniques of philosophical analysis. As such, the broad focus was conceptual in nature. This focus proceeds on the assumption that the arguments central to this thesis are not derivable through empirical means alone. Empirical data in a study of this nature may be necessary, but are not sufficient to adequately address the issues raised. They may however lend weight to the conceptual arguments advanced. The investigation proceeded within the broad framework of autonomy-based ethical theory, which acknowledges the deontologic conceptions of rights, duties, and obligations. The study sought to examine ethical issues in HMS research and teaching. An important contribution towards the conceptual aspect of the work was a critical and extensive literature review. The contributory empirical work consisted of investigating the ethical decision-making capabilities of professional researchers; adherence to ethical guidelines in terms of research publications; accountability of researchers to formal ethical review processes; and the existence of ethics models in curricula.

RESEARCH HYPOTHESES

As noted earlier, the study was primarily oriented toward conceptual analysis. Nevertheless, given that some empirical data were collected to supplement the arguments advanced, the following hypotheses were proposed to assist a broader examination of current ethical practices in HMS research:

1. There will be no differences between the incidence of acceptance, revision, and rejection, by HMS professionals, with respect to the review process of specifically constructed, ethically problematic, research proposals.

Stated statistically, the null hypothesis was:

$Ho = \mu A = \mu B = \mu C$

Where μA,μB and μC represent, respectively, the number of research proposals accepted, recommended for revision, and rejected as a result of the review process.

The alternative hypothesis was:

$Ha = \mu A \neq \mu B \neq \mu C$

2. There will be no differences in the incidence of reporting the informed consent process between categories of HMS journals.

Stated statistically, the null hypothesis was:

$Ho = \mu D = \mu E = \mu F = \mu G = \mu H$

Where μD, μE, μF, μG, μH represent the incidence of reporting of the informed consent process for journals in the following disciplinary domains respectively:

Physiological, Biophysical, Psycho-Social, Professional, Multidisciplinary.

The alternative hypothesis was:

$Ha = \mu C \neq \mu D \neq \mu E \neq \mu F \neq \mu G \neq \mu H$

3. There will be no differences between South African and Comparison sample HMS departments in terms of accountability to regulations

governing ethical issues in research.

Stated statistically the null hypothesis was:

$Ho = \mu I = \mu J$

Where μI and μJ represent the levels of accountability to regulations governing ethical issues in research, for South African and Comparison sample HMS Departments respectively.

The alternative hypothesis was:

$Ha = \mu I \neq \mu J$

DELIMITATIONS

The primary focus of the study was conceptual analysis. In addition to employing the standard techniques of philosophical inquiry, three methods of empirical data collection were utilised as follows:

A- 78 HMS professionals from 15 countries responded as reviewers to a set of 5 specifically constructed ethically problematic graduate research proposals. These proposals, encompassing 9 subdisciplines of HMS in 3 broad domains, were based on previously published journal articles but were altered so as to potentially violate several commonly accepted research ethics practices. By requiring respondents to review the proposals as if they were graduate supervisors, the process was designed to evaluate current research ethics awareness in HMS researchers.

B- 1347 articles in 23 HMS and allied disciplines journals, and 3 conference proceedings, were assessed to determine the incidence of reporting of the

informed consent process. Research papers were evaluated as to the necessity in each case for an ethical review or informed consent process, and the 703 thus selected were then analysed to determine whether or not such a process was reported.

C- 10 South African, 13 USA, and 4 Australian Heads of HMS Departments completed questionnaires designed to elicit specific information regarding the existence and application of regulations pertaining to research ethics practices in their departments, as well as to the educative practices employed in respect of teaching research ethics. This served to evaluate the presence of and adherence to guidelines in respect of research ethics in HMS

LIMITATIONS

The following limitations should be borne in mind when considering the conclusions and implications emanating from the empirical aspects of the study.

1. While every effort was made to survey a large number of HMS professionals from a variety of areas, the total number, and skewed distribution, of 78 respondents from 15 countries may limit the generalisability of the empirical data to the profession as a whole.

2. Similarly, the low number (n=27) of Head of Department responses limits the extrapolation of results pertaining to the existence of guidelines for research ethics practices.

3. Coupled with the anticipated limited importance of the empirical data to this study, the logistics involved in the mailing systems of 41 countries precluded the inclusion of stamped, self-addressed envelopes. When allied to the unavoidably onerous task of completing the questionnaires,

this reduced the response rate and constituted a limitation of the study.

4. Despite follow-up procedures, logistical difficulties resulted in a skewed distribution of responses, limiting the application of statistical procedures to the data.

5. With regard to the journal search data, it is acknowledged that non-reporting of the informed consent process does not directly indicate non-compliance with procedures.

6. In so far as statistical treatment was of importance to the conclusions, the limitations of nonparametric statistics should be borne in mind. Specifically, they are less powerful than parametric statistics. Also, Chi-Square's applicability may be limited when analysing small samples, and the inclusion of the Yates correction factor adds stringency in terms of rejecting the null hypothesis. Further, the fact that hypothesis 1 could not be based on any previous literature or empirical findings limited the applicability of statistics to the data represented by that hypothesis. A rational hypothesis, based on expectations of ethical codes and professional bodies, could not be formed to account for this, as the computational structure of Chi-Square would be biased towards rejecting the null hypothesis due to the insertion of low expected values. These statistical limitations serve to reinforce the importance of conceptual analysis, and to augment the primacy of the raw and percentage data over statistical analysis.

The above limitations were acknowledged, but recognition of the limitations and the subsequent design of the study as a multi-faceted, macro-investigation hopefully served to minimise any deficiencies inherent in the methodology. Further, the emphasis on conceptual analysis served to provide a holistic interpretation of the issues addressed.

CHAPTER II

CRITICAL ANALYSIS AND REVIEW OF LITERATURE

ETHICS

Although this study employed a limited empirical methodology to assist in the examination of research ethics practices in Human Movement Studies, its focus is broadly philosophical in that it attempts to identify and analyse the ethical principles that justify, or ought to justify, those practices. Therefore, whilst a detailed examination of Ethics and Applied Ethics falls outside the scope of this work, it is necessary to provide some relevant background information on those branches of Philosophy in order to place the narrower focus of the thesis in context.

Before defining ethics as a philosophical endeavour it is worth nothing that, following Kretchmar (1993), the terms 'ethical' and 'moral' will be used interchangeably in this text, as ethical issues are moral issues. In making decisions on these issues, such decisions could be morally good or bad. From this it follows that there are good and bad ethics, but when the term 'ethical' is used to describe an action, it will mean right or good, as it does in common language usage.

From the perspective of common language usage, it may be useful to explore lay conceptions of Ethics before proceeding to formal definitions. To most people the word 'ethics' suggests a set of standards by which the behaviour of a person or a group of people is regulated. (Note: this overlaps with Applied Ethics, which is examined later). In other words, ethics (as in medical ethics, research ethics, business ethics etc.) enables the group to distinguish what is legitimate or acceptable when they pursue their aims in that particular area. Moving from particular areas, ethics also implies that there can be standards of morality that

apply to people in respect of our general conduct as social beings. A Western example of this would be Christian moral teaching, and an African one would be Ubuntu. Very basically then, from moral philosophy comes a knowledge of what is right or wrong. The principle question of ethics is 'What ought I to do?, and this applies to philosophers and lay persons, including researchers. So, "... in so far as the man in the street thinks critically about his own moral views or those of others, or ponders on their justification, or compares them with rival attitudes, to that extent he is a moral philosopher." (Flew, 1984).

More formally, as a philosophical endeavour ethics "... is an investigation into the fundamental principles and basic concepts that are or ought to be found in a given field of thought and activity." (Flew, 1984). Veatch (1989) provides the following comprehensive definition:

> "Ethics is the enterprise of disciplined reflection on moral intuitions and moral choices. It often begins with intuitions and long-held convictions. It attempts to compare them for consistency, to formulate rules of conduct accounting for our considered judgements, and, to articulate general principles that might underlie these judgements and rules. It confronts questions such as how these more general rules and principles relate to each other and to our judgements. Finally it deals with basic questions of what we mean when we say something is ethical or unethical, and how we can know what is right or wrong." (p6).

Meta-ethics

The last sentence of the above definition refers to meaning, and it is worth briefly examining the distinction between meta-ethics and normative (substantive) ethics.

Meta-ethical questions about morality are not concerned about its content. That

is, they are not questions about how we should live, or what principles we should adopt. Meta-ethics deals with questions such as Meaning and Justification. For example, what function does moral language perform (meaning), and what justification, if any, have we for our moral beliefs. So meta-ethics is concerned about the meaning of moral terms and the nature of moral judgements, rather than the first-order prescriptions for what people ought to do, which is normative/substantive ethics. Thus meta-ethics deals with the meaning of ethical terms, whilst normative ethics deals with substantive issues such as what acts are 'right' etc. From this it is evident that meta-ethics is second-order reflection on the nature of moral discourse, as opposed to descriptive ethical statements which answer questions of fact about actual moral standpoints. Meta-ethical questions then are not about the content of morality, but focus on puzzles about its logical form, e.g. the problem of the logical relation between moral and factual beliefs. As such, meta-ethical questions are logically prior to normative ones, in that we need to know what forms of argument are appropriate before we can commence with answering the questions (Flew, 1984). Meta-theorists thus adopt a formal approach to ethics, attempting to explicate the logic of moral discourse by investigating the meaning(s) of moral terms (Prinsloo and Coetzee, 1987).

It has been claimed (Flew, 1984) that the primary task of ethics is to deal with `meta-ethical problems, leaving it an open question whether the more substantive questions of morality (those of a normative nature) can be tackled at a later stage. This entails being concerned with the logical, formal nature of moral language, and two of these logical properties of moral judgements are universalizability and overridingness. On their own, these two properties have no normative consequences. For them to have normative consequences, preferences and facts need to be added. For example, take two judgements:

'Researchers should experiment on prisoners'
'Researchers should not experiment on prisoners'

They are both universal and prescribing. They do not violate the logical form of moral language. The logical property does not have a normative impact on the action of experimentation. For that to occur, preferences and facts need to be added. Answers about the logical meaning won't determine the logic to understand the force of moral argument. Logic plus facts plus preferences make a difference to normative judgements.

Meta-ethics enables us to identify a logical (or formal) criterion which may be applied to determine what is moral thinking and what is not. For example, the universalisability thesis is often said to be a logical foundation for moral discourse at the first-order level. The principle holds that while individual moral judgements may be particular, they will always imply a universal judgement. So the proposition "Smith ought not to perform dangerous experiments on research subjects", whilst referring to a specific person on a specific occasion, will entail the universal proposition "anyone in like circumstances to Smith ought not to perform dangerous experiments on research subjects." If someone makes the statement "anyone in like circumstances to Smith - except myself -ought not to perform dangerous experiments on research subjects, he or she is not (according to the logical criterion identified) engaged in moral thinking. We have here an element of consistency, which is a logical requirement. The point is not that a logical thesis implies a certain moral standpoint, but that it may help us to spell out or clarify the rules in accordance with which first-order moral thinking is done. To return to the example of the universalisability thesis, the importance of this logical feature of morality is its use in (first-order) moral arguments. So, if we admit that particular moral judgements are linked to universal rules we are prevented from making arbitrary decisions in respect of given individuals.

Meta-theory helps us to determine the meanings and functions of moral words, and attempts to clarify the conceptual framework within which first-order moral discourse takes place. As such, meta-theorists are trying to understand a certain universe of discourse rather than to participate in it. It could be contended that

meta-theory provides only a clarification of the conceptual framework within which moral reasoning takes place; it is therefore, in the required sense, neutral as between different moral opinions. If this is accepted, the moral philosopher's major concern is not to make first order moral judgements, but to explicate a structure or framework of moral thinking. Recommending the performance of an action or committing oneself to a moral standpoint, according to this view, occurs only after the meta-level problems have been solved. The logical inquiry of meta-theorists indicates that unless we can satisfactorily explicate the logical properties of moral language, we will have confusion when we turn to normative judgements.

It seems difficult to abstract meta-ethics from normative ethics, and vice versa. Nevertheless, an examination of meta-ethics is obviously not the task of this work, which focuses on normative prescriptions, and on how ethics is applied in Human Movement Studies, particularly in research contexts.

Normative Ethics

In contrast to meta-ethics "normative ethics is the subject which deals with substantive issues such as what ends are "good", what acts are "right", what policies are "just" and for what acts a person should be held responsible." (Hospers, 1990). Normative ethics then deals with the content of moral principles and virtues, and their justification in terms of the human condition (Flew, 1984).

Normative moralists typically use moral language in a first-order way. The questions they ask concern the rightness or goodness of particular actions e.g. cheating in sport is wrong, harmful experimentation may be justified if science is to advance etc. These are practical judgements and normative ethics involves adopting particular moral standpoints. They tell us what we ought or ought not do, and they are about substantive moral issues such as fidelity, charity, euthanasia, abortion, infanticide, and racism.

Normative judgements are about what is right and good, as opposed to judgements about what is, how something works, or where it came from. They are thus different from descriptive, analytical, empirical, historical, metaphysical, and many other types of judgements or evaluations. Normative ethics is concerned with what ought to be, not with what is (Kretchmar, 1993). Consequently, moral language uses verbs, such as "ought" and "should", nouns such as "obligation", "duty", and "value", and adjectives such as "good", "bad", and "worthwhile". Normative judgements can be about actions (behaviour), as in "You ought not to deceive research subjects about the risks of participating in a project", or they can be about values, as in "The autonomy of research subjects is important".

ETHICAL THEORIES

Normative judgements are justified by appealing to ethical theories. Various such theories have been developed to serve as the basis for moral decisions, and they fall into four basic categories, namely teleological/consequence based theories, deontologic principle based theories, virtue based theories, and narrative based theories. The first two categories are of importance for this thesis, and a brief overview of them follows.

Teleological/Consequentialist Theories

These theories essentially hold that the ultimate standard of what is right and wrong is the consequences for good and evil produced. They emphasize that we need to examine the possible consequences or practical implications of our intended actions to determine whether an action is right or wrong. If the good consequences outweigh the bad ones the action is morally permissible, but if the bad consequences outweigh the good ones the action is morally wrong (Rossouw, 1994).

Probably the best known and most influential teleological theory is that of

Utilitarianism. This is the moral doctrine that holds that we should always act to produce the greatest possible balance of good over bad for everyone affected by our action. A good action is one that contributes to the happiness of most people affected by that action. By 'good', utilitarians understand happiness, and happiness is defined as the experience of pleasure or the absence of pain. What makes a moral act right is thus the principle of the greatest happiness of all. In choosing between various actions in a given situation, utilitarians propose that the chosen alternative should result in more happiness for most people, and cause the least harm to the remaining minority. Thus the ultimate criterion, directly or indirectly, must be to the comparative amount of good produced, or rather to the comparative amount of good over evil produced (Frankena, 1973). Motives then are not important in determining what is right and what is wrong. Utilitarianism is not concerned with being a good person - rather, of central concern is "what is right?"

Utilitarianism then attempts to show that our notions of obligation can be made compatible with the greatest happiness principle, the aim being the greatest happiness of the greatest number. This principle is general and formal (it does not mention a substantive issue and is not formulated with a specific context in mind), but its point is to direct conduct in specific contexts (so it is applied to substantive issues) and to produce certain substantive results. As a normative system it thus attempts to present truths about the goodness or rightness of substantive issues in a systematic way.

Utilitarian moral philosophers are generally divided into two categories, namely Act and Rule utilitarians. Act utilitarianism applies the principle of utility directly to individual acts, asking the question "What effect will my doing this act in this situation have on the general balance of good over evil?" Put differently an act utilitarian argues that in all situations one ought to perform that act which leads to the greatest good for the greatest number (Beauchamp and Bowie, 1979). On this account, rules are simply rules of thumb. As such, these rules can and

should be violated if it is thought that in the particular situation such a violation would actually lead to the greatest good for the greatest number. Put differently, Act utilitarians contend that principles and rules other than utility are indefensible unless they function only as guidelines without prescriptive, binding power. On this account they view Rule utilitarians and Rule Deontologists as more alike than different, with both making too much of principles and rules and too little of the consequences of actions. According to Act consequentialists, adherence to principles and rules creates victims of morality - people suffer bad consequences(Veatch, 1989). So, for Act utilitarians, keeping promises may be generally right, but this is only a guideline, and an act is right if its consequences bring more total good than those of any alternative course of action.

Act utilitarianism can be criticised in various ways. For example, if one has two acts (A and B) with no morally relevant differences in the balance of good over evil, but Act A involves lying; act utilitarianism holds that they are morally equal. Intuitively, this seems wrong. Further, act utilitarianism may, in certain situations, require harm or punishment of innocent persons if utility for the majority is to increase, and this too is counterintuitive (Beauchamp and Bowie, 1979).

In an attempt to rescue utilitarianism from such counterintuitive consequences as punishing the innocent, Rule Utilitarianism requires that we look to rules or practices rather than to individual acts. Rule utilitarianism is the theory that ethical actions should conform to firm and publicly advocated moral rules. Thus in determining what act is right, we need to appeal to a rule, and there are several reasons for this. From a practical point of view in making judgements, rules save time. Further, principles and rules may be necessary to solve problems of coordination, cooperation, and trust in human interaction. Also both ignorance and bias may be eliminated when appealing to rules. For rule utilitarians, the test for individual judgement or action is the relevant rules or practices, the test for which in turn is the principle of utility. In other words, utilitarianism itself justifies the rules.

Rule utilitarianism gets around many of the problems that plague Act utilitarianism, in that an action is not necessarily wrong if it fails to maximise happiness, and vice versa. In an ideal code, principles would have different moral weighting and would also be capable of being overridden by other principles. As such, it provides a plausible basis for deciding between moral principles that, generally adhered to, would best promote human happiness (Shaw and Barry, 1992).

Act utilitarians criticize insistence on rules by pointing out that as there will be instances when a generally beneficial rule will not maximize happiness, the fundamental principle of utility is violated by rule utilitarianism. This introduces the fact that we should sometimes obey the rules and sometimes not. Rule utilitarianism is also criticised by nonconsequentialists who don't accept that moral principles should be determined by consequences. Such a determination, they contend, ultimately subordinates rights to utilitarian calculation, and fails to treat rights as fundamental and independent moral factors (Shaw and Barry, 1992). Thus the maximisation of happiness should not lead to us ignoring obligations to others, for example to the suspension of rights of minorities or vulnerable populations. A further criticism of rules, particularly in the context of biomedical ethics, holds that they are appropriate in interactions among strangers but not among friends or intimates. However, social changes and the growth of bureaucracy, as well as changes in patterns of health care and research, means that human interaction in these contexts increasingly takes place among strangers. So, for example, in a researcher/participant interaction, trust among strangers cannot presuppose knowledge of their traits of character or their values. In the absence of community, principles, rules, and procedures have become increasingly important (Veatch, 1989). Rules are also criticised by some virtue theorists, who hold that we should ask "What ought I to be?" rather than "What ought I to do?". This however is straying into the area of moral intuition, and Veatch (1989) states that "There is simply no assurance that good people will discern what is right." (p45). We may need to emphasise virtues, but it is

necessary to have an independent assessment of acts in light of moral principles. Put differently, virtues may be necessary but not sufficient to determine right actions. Finally, Frankena (1973) objects to both Act and Rule utilitarianism, stating that even if two acts are equal in utility, they may still distribute the balance of good over evil produced in different ways. In other words, the benefits and burdens may not necessarily be distributed justly.

> "... an action, practice or rule may maximize the sum of good in the world, and yet be unjust in the way in which it distributes this sum, so that a less beneficent one that is more just may be preferable. ... what is just is independent of utility. If justice may overrule utility on occasion, then the question of what is right cannot be answered by appeal to the principle of utility and the deontologists are correct after all, at least in part." (Frankena, 1973; p 41).

Deontological/Nonconsequential Theories

Deontologists differ from consequentialists in that they deny the ultimate importance of consequences. This does not necessarily mean that they consider consequences to be irrelevant - rather, they contend that other factors are also important in determining what is right and wrong, e.g. past actions, motives, relationships, and conscience can all determine obligations. Generally speaking, deontology is an ethical theory of duty, holding that some acts are morally obligatory regardless of their consequences (Frankena, 1973).

Deontological theories also differ, and classification depends on the role they give to general rules. Act deontological theories hold that basic judgements about obligations are all particular e.g. "In this situation I ought to do so and so." Rules then are unnecessary and aren't basic, and we must make judgements in particular cases. General rules such as "We ought always to keep our promises" are unavailable, of little use, or are at best derived from particular judgements

(Frankena, 1973). Extreme act deontologists maintain that there are no general rules of morality and hold the existentialist position that we must make moral decisions separately in each particular situation. In a less extreme form, act deontologism allows that some general rules can be derived from particular cases, and these rules may be of some use in making moral decisions in the future, but general rules still cannot supersede a sound particular judgement." Situation Ethics includes both of these forms of act deontologism (Frankena, 1973).

If there are not standards, rules or general principles which determine our obligations, and if judgements are particular, how then do we know whether or not an act is right or wrong? An existentialist answer would be that *you* decide, that is, *you* invent a morality. This is unsatisfactory, as unguided decisions are not a morality. What in effect happens in this sort of situation is that your decision makes your action right merely by choosing it. A second possibility for distinguishing right from wrong could be intuition. There is however evidence against a distinct moral intuitive faculty (Frankena, 1973), and everyday experience shows us that people often disagree about what is right or wrong in particular situations.

The main argument for act deontologism is that each situation we face is unique, and therefore rules don't apply, as they generalise. According to Frankena (1973) however this is not a good enough argument, as situations are not necessarily unique in all respects. Furthermore, situations may be alike in morally relevant respects, that is, there may be common moral threads.

Another argument against act deontologism is that it is practically impossible for us to do without rules, in that time constraints prevent us from judging each situation anew. Further, rules are needed in moral education:

> "... to learn to do anything is never to learn to do an individual act;

it is always to learn to do acts of a certain kind in a certain kind of situation; and this is to learn a principle ..." (Frankena, 1973, p24).

To learn, then, is to learn rules.

Another line of argument against act deontologism holds that particular value judgements are always implicitly general. In other words, when one makes a particular moral judgement, one implicitly commits oneself to making the same judgement in a similar situation (Frankena, 1973). This is the principle of universalisability (see earlier), and is related to the fact that particular ethical judgements can be supported by reasons. As noted earlier, universalisability holds that when you make a particular judgement you are implicitly making a general one, and on this account, act deontologism can't be correct.

Frankena (1973) states that from the above it follows that act deontological theories are untenable in principle; that in making rational moral decisions one is at least implicitly espousing rules or principles. In concurring to some extent, Veatch (1989) states that whilst it may be possible and even desirable to escape the tyranny of absolute, single unchallengeable principles, it may not be possible or desirable to escape all principles and rules. This leads to rule deontologism, which holds that there is some non-consequential standard consisting of one or more rules which always ought to guide our actions in certain kinds of situations. For rule deontologists then, rules are basic and determine what is right and wrong.

Generally speaking, rule deontologists hold that the moral standard consists of a number of specific rules, those rules saying that we ought always to act in a certain way in a certain kind of situation. So, for example, we ought always to obtain written, first-person, informed consent before conducting research that may have unpleasant side-effects. However, what if our research takes place amongst an illiterate, isolated tribe, and the results are likely to directly benefit that tribe?

This example serves to illustrate the stock objection to rule deontologism - that no rule can be framed which does not admit of exceptions, and no set of rules can be framed which does not admit of conflicts between the rules (Frankena, 1973). One attempted answer to this objection could be that rules can be ranked hierarchically and thus not conflict. Another could be to build all the necessary exceptions into the rules, so that, fully stated, they have no exceptions. Despite these attempts however, deontologism has not yet provided us with a conflict- and exception-free system of rules about what we ought to do.

Deontological vs Consequential Theories

We have noted strong disagreement between deontologists and teleologists. Deontologists such as Kant focus on duties and obligations (e.g. promise keeping), such duties being inviolate and overriding with regard to consequences. On the other hand, teleologists see consequences as being crucial in evaluating the moral worth of an action, claiming that our overriding obligation is to maximise the good (Borchert and Stewart, 1986).

Both approaches have advantages and disadvantages. A deontologic approach to ethics has generally been more popular, probably because different moral dilemmas are in fact similar in several relevant respects. Rules thus are useful in their universality. Further, from a practical point of view, rules are useful in that we often do not have the time needed to perform the sort of "moral accounting" required by consequence based theories. Further, rules encourage consistency in moral behaviour. Also, rules respect the rights and interests of all persons, and not only those of the majority. Deontologic ethics also however has some problems. Firstly, we may be faced with unique situations where rules do not apply. Secondly, in some situations rules may conflict, resulting in a contradiction, and it may not be clear which rule should take precedence. Thirdly, rigid compliance with rules may deflect attention from consequences altogether, and may replace genuine care and legitimate concern for the welfare of others.

Teleological theories are useful in that attention is directed to the practical consequences of actions. As such, a theory such as utilitarianism provides a practical guideline for assessing the morality of actions. There are however several problems with consequence based theories. Firstly, obligations to others are ignored. An extreme example here is when the teleologists' absolute commitment to maximising the good leads to the harm of innocent persons in order to maximise the happiness of society. Insistence on consequences as the ultimate standard of what is morally right or wrong may often be counterintuitive, and further, even if two acts are equal in terms of consequences, the benefits and burdens will not necessarily be distributed justly.

Where does the disagreement leave us? Ethical theories need to be defensible, and we need to apply theories to practical moral puzzles that we encounter daily in the lived world. Moral philosophers are increasingly directing their attention to applied ethics, to bring ethical theories, such as have been discussed, to bear on specific real world problems. In this regard, Veatch (1989) holds that the difficult questions of biomedical ethics do not concern whether or not to invoke and apply principles or rules. Rather, we need to focus our attention on which principles and rules should be adopted, how they should be interpreted, how much weight and strength they should have, which should have priority in cases of conflict, and in what relations and situations they should apply.

RESEARCH AND APPLIED ETHICS

As in other areas of scientific inquiry, there has been an ever-increasing demand for research to be undertaken in the subdisciplines of Human Movement Studies (HMS) (Olivier, 1995), and there is general agreement that research involving human subjects is important to the development of new knowledge in many different areas (Liemohn, 1979). In this context, research is critical and exhaustive investigation that has the following aims: 1) the discovery of new facts about the human through systematic observation or experimentation, and 2) the

correct interpretation of these facts and the testing of new hypotheses (Christakis, 1992). More generally, research is considered to be a formal investigation designed to develop or contribute to generalisable knowledge in a field of study.

Bok (1978) states that free scientific inquiry and social stability are often at odds. Indeed, this is so, and the interface between scientists and the public has historically been beset with conflict. For confirmation, one has only to turn to the example of Galileo, and many other social and political concerns have consistently produced, and continue to produce, friction between scientific inquiry and societal concerns (Kroll, 1993). Particularly when research (and the freedom to conduct it) impinges on the perceived rights of individuals or groups, a sense of alarm grows even in societies that have traditionally given free rein to such activities (Bok, 1978). In HMS and allied disciplines, progress has demanded that subjects be increasingly subjected to manipulative, and sometimes even invasive procedures. The very nature of research of course means that while procedures may be carefully implemented and controlled, the specific effects cannot be predetermined (Brodie and Stopani, 1990; Olivier, 1995). Nevertheless, in Western society, science plays a revered role, and scientific development has long been regarded as an undisputed good for everyone. For example, Western medicine, a fundamentally rational and experimental science, holds research in much esteem, and bases much of its power on it. Higgins (1996) feels that there is little convincing evidence that the institution of science is in danger in the USA, and this is supported by Macilwain (1996), who states that "The American public continues to hold science in respect, with three-quarters of the population believing that the benefits of research outweigh its harmful results." (p355). As pointed out, research in these contexts is not without risks, and particularly as a result of problems arising in the medical arena ethical issues have recently exploded into the public consciousness. This explosion has led to some doubt as to whether research, particularly research involving human subjects, is based on shared interest, between researcher and object, between society and researcher, and between society and the individual, or whether certain areas of research

contain different or even antagonistic interests (Scocozza, 1989). This raises the issue of whether or not current research practices are geared towards utilitarian or deontological ethics. The theories have been comprehensively dealt with elsewhere, but briefly, utilitarian ethics are characterised by the importance they attach to the ultimate usefulness of the acts that one performs. In a research context this means that ethical acceptability is assessed on the basis of the consequences, specifically the applicability of the results (Scocozza, 1989). In short, utilitarians contend that the ethically defensible is that which can be useful to most people. In contrast, deontologists maintain that ends do not justify means, and that an individual's interests, freedom and possibility of choice must be central. In this approach morality is founded on a dialogue in which the partners recognize each other as equals, a point of view that has important implications for investigators and research participants. Which approach holds sway in our current research environment? Brodie and Stopani (1990) have little doubt that the utilitarian view tends to predominate in experiments in Human Movement Studies and allied disciplines, and this supports the view held by Rifkin (1988) and Scocozza (1989), who contend that the predominant ethics within the health sector are utilitarian. Utilitarian ethics are an inevitable result of a positivist approach to science, an approach criticised by French (1987), who states "In the positivist programme, research is something that is done to people, perhaps for people, but the stance of objectivity prevents it from being done together with people or by them." (p18). The potential participatory nature of research is discussed elsewhere, but Bok (1978) states that "If total harmlessness were a prerequisite, little progress would be made in areas where urgent needs must be met." Indeed, Blanck et al. (1992) state that there is an ethical imperative in doing sound research, for otherwise social change will be left in the hands of people who are unable to substantiate their ideas on the basis of evidence.

Therapeutic and Non-therapeutic Research

Before continuing, a distinction between therapeutic and non-therapeutic research

needs to be made. Research is said to be therapeutic if it is potentially of direct benefit to the participant(s), and nontherapeutic if it is not intended to be of direct benefit to the patient or normal volunteer (Cardon **et al**. 1976). So, in non-therapeutic research, the participant does not necessarily benefit, and may be inconvenienced or even harmed (Editorial, 1991). Most medical research, and indeed most research in Human Movement Studies and allied disciplines, falls into this category. Note that the term "clinical research" is taken by the World Medical Association to be synonymous with therapeutic, while "non-clinical biomedical research" refers to non-therapeutic research (Capron, in Veatch, 1989). Whatever the terminology, we need to be aware that research is not necessarily therapeutic, and assumptions to the contrary carry risks for both researchers and participants. There is perhaps a human tendency to overrate the benefits and underestimate the risks of research, particularly where therapy is involved, and researchers need to guard against even unwittingly exposing research participants to unreasonable risks (Capron, in Veatch,1989).

Earlier it was noted that our "progress imperative" view of science has resulted in an increasing demand for research to be undertaken on human subjects. The quest for knowledge about the human body has further resulted in research participants being increasingly subjected to invasive, potentially dangerous experimentation, and this has, in some cases, led to harmful consequences. This issue is dealt with in some detail elsewhere - suffice to say that the history of research provides abundant evidence to show how easy it is to exploit individuals. This is particularly the case when the only moral guide for science is a naive utilitarian dedication to the greatest good for the greatest number (Fethe, 1993).

Risks and Benefits

There have been, and continue to be, numerous demands for the regulation of research with injurious or invasive potential. Bok (1978) states that "The freedom of scientists to pursue research unchecked must ... be weighed against the

freedom of those affected by the research" (p15). Following on from this, the risk of retarding progress and hampering researchers through regulation must, in turn, be weighed against the risk of harm in the absence of regulation. Many in the scientific community, and Human Movement Studies is no exception, would probably be disturbed that the question even arises. They probably contend that, generally speaking, the risks are relatively small or nonexistent, and further, when there are significant risks, the researcher's integrity and the existing avenues of regulation are sufficient to provide adequate protection for research participants. Some of these claims are of course legitimate. A great many researchers in Human Movement Studies and allied disciplines pursue tasks so benign that they are not even remotely capable of threatening anything or anyone. Just one example might be questionnaire administration to examine attitudes to Physical Education in schools. In cases such as these, particularly if coercion is absent and anonymity guaranteed, consent is implied by mere participation, as refusal to reply is a viable option. Further broad categories might include case histories, analyses of injuries, research concerned with technical or biochemical information, work with purely statistical data, and surveys in general. It is difficult however to classify certain types of research as potentially harmful and others as risk free. For example, even observational studies, in themselves seemingly least capable of having an effect of a harmful nature, can carry risks through improper and intrusive observation. Also, when observation takes the place of known therapy, as in the Tuskegee study (see p 54, History of Abuse in Human Experimentation), the lack of action is considered unethical. Even in research as seemingly benign as questionnaires can the information gained be misused to the detriment of the participant. There is no neat dividing line, and were such a barrier to be suggested it would have to be considered an artificial one. Nevertheless, the point is that many researchers, if they consider the issue at all, view their investigations as fundamentally risk-free. Of greater significance though is that others who do perceive some threats from certain kinds of research may consider the potential benefits to humanity as sufficient compensation (Bok, 1978). This is the utilitarian approach referred to by Fethe (1993) (see earlier).

It may of course be legitimate to argue that certain risks are unavoidable and necessary if society is to gain from research, but here it becomes important to raise issues of distributive justice. For example, Bok (1978) states that "It is no accident that much research of a questionable nature has been conducted on the most vulnerable and helpless: on children, the institutionalized, the sick and the poor." (p117).

What, however, do we mean by risky research? The term "subject at risk " has been defined to mean:

> "Any individual who may be exposed to the possibility of injury, including physical, psychological, or social injury, as a consequence of participation as a subject in any research, development, or related activity which departs from the application of those established and accepted methods necessary to meet his needs, or which increases the ordinary risks of daily life, including the recognized risks inherent in a chosen occupation or field of service." (DHEW 1978, in Liemohn, 1979, p158).

Further, Liemohn (1979) states that if an investigation is for the sole purpose of benefiting the subject, the subject should be considered at risk if any biological, emotional or behavioural condition is investigated. Of course, as noted earlier, different types of research will pose different types and possibilities of risk, and many experiments may not involve risk beyond that experienced in ordinary life situations. However, this does not obviate the investigator from the responsibility of protecting research participants. "It is contingent upon every investigator to consider all ramifications of his or her research before declaring that risk is not a factor." (Liemohn, 1979). Bok (1978) states that in much research there is in fact little clear abuse, with the magnitude and probability of risks being disputed. Equally however, the benefits hoped for are often conjectural. Nevertheless, Institutional Review Boards are exhorted to a) ascertain if research increases risk beyond an acceptable level, and b) determine the "risk-benefit" ratio. It is

probably worth noting here that in the research context "benefit" does not only refer to immediate benefit to the subject alone. In an important, general sense, the benefit to others is a benefit to science from an increase in generalisable knowledge. This again introduces the question of utility, and the willingness of society to accept such benefits, even perhaps at the expense of unwilling individuals, needs to be borne in mind when evaluating the legal and ethical issues posed by research (Capron, in Veatch, 1989).

The above arguments are largely conjectural. Are there in fact any real risks associated with research in Human Movement Studies and allied disciplines? In an analysis of injuries to research subjects. Cardon **et al.** (1976) found injuries were reported for 0.7 percent of 133 000 subjects. Eighty percent of these injuries were classified by the principal investigator as trivial, and nearly all the remainder as temporarily disabling. Permanently disabling and fatal injuries together accounted for about one percent of all injuries. When distinguishing between therapeutic and non-therapeutic research, of 93 000 subjects who participated in non-therapeutic studies, 0.8 percent were reported injured, indicating in general that nontherapeutic research is much safer than some types of therapeutic research. It is also worth recognizing that a large majority of immediately identified injuries that occur in therapeutic research are well-recognised hazards of the treatment/s employed. In evaluating the results, Cardon **et al.** (1976) conclude that the risks of participation in non-therapeutic research may be no greater than those of everyday life, and in therapeutic research, no greater than those of treatment in other settings. Virtually any study produces some risk, and consequently it is the task of the investigator (and the ethical review board) to establish whether or not the risks present are significant ones. Would the taking of a blood sample, which always carries the risk of a haematoma, be considered a significant risk? Many exercise laboratories do cholesterol screening, or assess haemoglobin levels, using simple finger-prick devices. Kroll (1993) reports that these have a known risk of hepatitis B transmission, to the extent that in the USA the Food and Drug Administration (FDA) released a nationwide alert about

improper use of such devices.

Can we determine the potential risks of exercise tests? Kroll (1993) reports the American College of Sports Medicine (ACSM) position that, having weighed the risk of death against the benefits of exercise, the overall risk-benefit ratio for an active way of life is favourable. This is justified by the fact that while death rates are transiently increased during the test, they are presumably decreased for the remainder of the day. Specifically, a slightly higher risk of cardiac arrest of 21 events per 100 million person-hours during exercise compared to 18 events in sedentary men is considered reasonable. Nevertheless, the ACSM informed consent example for a health-related exercise test also includes a statement regarding the following risks: abnormal blood pressure, fainting, disorder of heart beat, and, in rare instances, heart attack, stroke, or death. Kroll (1993) reports a study which found a mortality rate of 1 per 10 000 tests, and a combined mortality-morbidity rate of 4 per 170 000 tests. This is contrasted with a death rate of 0.5 per 10 000 exercise tests reported by the ACSM (Kroll, 1993). Whatever the figures, it is worth noting that regardless of precautions taken, it is impossible to completely eliminate the risk of a serious event during exercise testing or exercise participation (Guidelines for Exercise Testing and Prescription, 1991).

Turning briefly to the issue of risk-benefit ratio, Kroll (1993) states that intrinsic to informed consent, particularly in a medical context, is that the clinical treatment of a research subject would surpass the benefits associated with a traditional treatment regimen. Additional possible risks have also however to be factored into the equation, and if the new treatment had significant risks with only slightly increased benefits, the proposed investigation might be deemed inadvisable. This has some relevance in the use of control groups in exercise regimen investigations, which typically involve comparison of new techniques against traditional ones, i.e. the control group. Whilst the control group would not be subjected to any additional risks, are there in fact any benefits attached to their

participation? In tests where the control group is subjected, for example, to a traditional exercise regimen, they clearly do derive some benefit. However, when a control group is required to remain sedentary, are they being treated ethically? Whilst they accrue no additional risks, are they receiving any benefits from participation in the study? If, following assessment, subjects are considered "at risk" according to USA Federal and Institutional guidelines, the following conditions must be met for a research project to receive approval:

a) The risks must be sufficiently outweighed by the importance of the knowledge to be gained.
b) The rights and welfare of the subjects must be adequately protected.
c) Progress and activity of the project must be regularly monitored, and
d) Legally effective informed consent must be obtained from the subjects (Landers, 1979; p135).

Detailed guidelines regarding risk/benefit assessment, and classification of risks (e.g. negligible, minimal, more than minimal), exist (MRC, 1993), but it could be argued that "Whatever the perceived benefits, inhuman or careless treatment of subjects is never justified." (MRC, 1993; p25). This is consistent with Zelaznik's (1993) contention that the use of human subjects in research is a privilege, and the rights of research participants always outweigh the desires of the researcher to conduct research.

Current Research Practices in Human Movement Studies

What of current research practices in Human Movement Studies and allied disciplines? Are there cases where violations of commonly accepted research ethics occur?

Wagner (1991) points out that ergogenic aids such as amphetamines and anabolic-androgenic steroids have the potential to produce a wide array of

adverse physiological and psychological effects, and he states the following:

> "Whether the ergogenic aids are real or perceived, the potential for adverse effects exists ... (and) potential health complications represent a serious risk to an otherwise healthy population." (Wagner, 1991; p 251).

Bahrke, Yesalis, and Wright (1990) concur and place additional emphasis on the issue of psychological dependence on such aids. Athletes and research subjects (who are often athletes) are clearly not immune to factors that contribute and predispose one to drug abuse in the general population. Wagner (1991) in fact contends that factors unique to athletes may place them at an increased risk for drug abuse. Given the adverse effects and the possibility of dependence and the fact that there is a substantial body of research in this area, there is a need to question what conditions, if any, justify the administration of steroids to research subjects.

It is not reported whether Crist, Stackpole, and Peake (1983) considered this question when administering relatively high doses of testosterone cypionate and nandrolone decanoate to nine volunteer subjects in an effort to determine the effects of androgenic-anabolic steroids on neuromuscular power and body composition. Although no significant effects were noted, the subjects reported subjective feelings of increased strength after the administration of anabolic agents. These subjective impressions may be an important factor in the acceptance of steroids by athletes in attempts to improve physical performance. Furthermore, such impressions may then result in psychological dependence, with the immediate benefits being readily visible, while the longer term adverse effects are not yet apparent.

Although not as overtly dramatic as the effects of steroids, nicotine is a complex addictive drug that has been shown to alter many of the body's regulatory

mechanisms (Marks and Perkins, 1990). Marks and Perkins (1990) state that the health hazards of smoking are clearly evident and that tobacco withdrawal syndrome occurs within 24 hours of abstinence and can result in headaches, constipation, irritability, and fatigue. They reviewed several studies involving the administration of nicotine by various means to both smokers and nonsmokers. As with some other research in Human Movement Studies, such research needs to be examined against the proposed construct of ethical principles mentioned earlier. Also, the question of alternative avenues of research, using humans only as a last resort, needs to be raised.

Another ergogenic aid that has increasingly become the focus of research is the process of blood-doping (erythrocemia). Jones and Tunstall Pedoe (1989) note that evidence suggests that blood doping can result in significant improvements in physiological variables such as maximum oxygen uptake and lactate buffering, such changes matching improvements in endurance performance. This supports the research of Robertson et al. (1984), who found that maximal VO_2 and physical work capacity increased in women following induced erythrocemia.

As with other research involving ergogenic aids, studies involving induced erythrocemia may present some ethical problems. First, there is the possibility of adverse effects as a result of the procedure. Besides the theoretical risks of transfer of infectious diseases such as AIDS and hepatitis if heterologous transfusion is used, any intravenous infusion carries risks such as venous thrombosis. Also, human recombinant erythropoietin is now available and has the potential to produce erythrocemia similar to or greater than blood doping. However, erythropoietin use can lead to hypertension, heart failure, or strokes, and although not conclusively linked, several deaths of athletes known to have been taking the substance have been reported (Wagner, 1991).

Second, having experienced the benefits of the procedure firsthand, a subject is presented with the choice of whether to continue with the practice. Given the

increasingly competitive nature of sport and the attendant rewards for performance, the athlete is placed a step closer towards having a moral problem. It will not do to argue that the problem existed anyway. As a research subject, the athlete has, as it were, been "introduced" to the problem. Given that blood doping is banned by the International Olympic Committee, the individual who chooses to continue has opted to operate outside the code of ethics adopted by the duly constituted authorities. The argument thus is that by virtue of being a research subject, albeit voluntarily, the individual has been placed a step closer to temptation as a result of inadequate consideration of ethics by the researcher. This is, of course, not to suggest a utopian vision of research as being totally risk free. Rather, it means that it would be dangerous for researchers to assume that increasing general concern with ethical issues and the rights of subjects in the present-day moral climate necessarily means that such issues have been considered, even if such consideration is not explicitly reported.

Wolfe et al. (1989) note that during intensive exertion by pregnant women, maternal skeletal muscle and the fetus may compete for blood flow, oxygen delivery, and essential fuel substrates, with the attendant hypothetical risks of acute fetal hypoxia, hyperthermia, and malnutrition. With repeated chronic exercise, fetal growth retardation and altered fetal development may result. Although there are postulated benefits of exercise during pregnancy, the authors note that these remain to be confirmed (Wolfe et al. 1989). Given the dangers outlined above, it would seem prudent to proceed cautiously when requiring pregnant participants to adhere to an exercise regime.

Despite the potential problems, extensive research is performed utilizing pregnant women as subjects. For example, Clapp et al. (1989) investigated thermoregulatory and metabolic responses to jogging prior to and during pregnancy. While acknowledging that in such studies ethical and regulatory concerns limit protocol, the authors conclude that exercise conforming to the type and intensity and duration of that of their study may indeed limit fetal substrate

availability in late pregnancy. While findings such as these may increase knowledge in this area, the methods used may violate the autonomy of the participants (both mother and fetus) and may be maleficent to subjects. The general question raised is whether, in research involving human participants, utility should trump the right to self-determination of subjects.

As Bok (1978) states, it is not always easy to know whether, and to what extent, research carries direct risks. Despite the grandiose claims of scientists, it is as well to remember that progress is an optional not a mandatory goal, and its pursuit must take place within limits established by other values, including the value of individual autonomy (Capron, in Veatch, 1989). The effort to identify risks in research must be constant (Bok, 1978), and ethical scrutiny is needed to determine the cost of research, when cost includes possible harm to values other than the advancement of knowledge (Capron, in Veatch, 1989). This introduces the point of view that researchers should consider the moral stance that the rights of the study participant ought always to outweigh the desires of the researcher to conduct research (Zelaznik,1993; Olivier, 1995).

Applied Ethics

Having broadly examined ethics as a philosophical endeavour, and having focussed on several moral theories, it is necessary to move from general to more specific ethical questions. Put differently, the question is no longer "What ought I to do?" but "What ought I to do in this instance?" So, whilst some of these issues were broached in the previous section, this review now moves to situationally specific ethical issues.

What is meant by the term Applied Ethics (AE), and how does it differ, if at all from Ethics as discussed earlier? Can we in fact usefully employ moral theory to help us penetrate the complexity of the human situation to generate a rationally consistent response to real-world ethical problems? Borchert and Stewart (1986)

provide the example of some utilitarians who propose that moral decision-making should be done according to simple hedonistic calculus. That is, they simply determine the net units of pleasure likely to be produced by alternative actions, select the action that generates the most pleasure, and pursue it as the moral thing to do. On the other hand, Kant thought that applying ethical insights to real-world situations was not the job of moral philosophy at all. In distinguishing between moral philosophy and morals proper, he held that the task of moral philosophy was to analyse the fundamental principles of ethics (Borchert and Stewart, 1986). This approach has been popular in the twentieth century in the form of Meta-ethics (see earlier), which directs our attention to the meanings and functions of moral words, and attempts to clarify fundamental ethical terms and investigate the nature of ethical judgements. Applying moral philosophy to actual situations was thus seen as being outside the province of moral philosophers.

This attitude is changing, probably partly in response to the fact that ethical problems in medicine and the biological sciences have, in recent decades, exploded into the public consciousness at an exponential rate (Veatch, 1989). Benatar (1994, p32) notes that medical ethics has changed "... from a purely traditional, private, vaguely articulated, intraprofessional, code-based activity to a more public, interprofessional and explicit component in which fundamental questions of morality are raised." With increasingly complex and advanced technologies, morally appropriate choices must be made, and Borchert and Stewart (1986) contend that moral philosophers are best trained to evaluate and guide those choices. Throughout the world, departments of Philosophy are now offering courses in medical ethics, research ethics, environmental ethics, business and professional ethics etc. Why has this happened? The primary reason for the growth of Applied Ethics is that it is a response to new problems resulting from developing technology. For example, advances in medicine have raised perplexing questions about the definition of death, questions which need to be answered when applied to practical situations of organ transplantation. With regard to sport, questions of personhood and natural states need to be

considered when considering performance enhancing substances. There are numerous examples, and Borchert and Stewart (1986) contend that to advocate a "hands-off" approach to normative issues would constitute not only an abnegation of the traditional goal of moral philosophy (i.e. the good life), but also an unacceptable disengagement from important moral issues. Further, they contend that these issues require the sort of insight that philosophical thinking is able to provide. This is supported by Veatch (1989), who holds that there is no reason to assume that being skilled in, for example medical science, will make one expert in choosing among conflicting courses of actions. In short, knowledge of basic philosophical and ethical positions is necessary. Veatch (1989) states that to decide to pursue a certain course of action is to decide that it is more right than available alternatives, and this means making a value judgement. Making this sort of judgement may involve making ethical choices. Some of these choices may be made instinctively, but in other cases our intuitions may fail us, or they may conflict with the intuitions or convictions of other people. When making ethical choices, the process would ideally involve disciplined, rigorous and systematic reflection on intuitions, convictions, facts before making a considered judgement as to what is morally right or wrong. This is however close to the definition of Ethics as a discipline offered earlier, and Veatch (1989) notes that increasingly ethics is becoming a discipline that is applied to real world problems. Following on from this, he defines Applied Ethics as a process which takes various rules and principles and integrates them with detailed knowledge of the relevant facts and customs of a particular sphere of life, such as medicine, or research on human beings.

So, in real-life situations, moral dilemmas are often generated by conflicts among moral principles, and normative principles serve as guides to action by specifying which types of actions are morally required, prohibited or permitted (Veatch, 1989). Conflicts are resolved by assessing the meaning and weight of the relevant principles, and then deciding what course of action ought to be followed. It is worth noting that principles are general in nature, and specific rules may be

subsumed under them. Veatch (1989) states that moral judgements generally have a three-tiered structure, namely 1. Principles, 2. Rules, and 3. Particular judgements. It could be argued that there are three major principles (encompassing many other primary and secondary moral obligations and considerations), namely respect for persons, beneficence (including nonmaleficence), and justice. Of these, the first is probably all-embracing. Moral considerations in respect of research involving human subjects would include autonomy, obligations not to harm others, utility (obligations to produce a net balance of benefits over harm), justice (obligations to distribute benefits and harms fairly), fidelity (obligations to keep promises and contracts), privacy, and veracity (obligations of truthfulness). More specific ethical considerations would include recognition of cultural factors, nondiscrimination, sanctions against offenders, compliance with procedures, and reports of violations (Olivier, 1995). In addition, universalisability is widely accepted as a necessary condition for any moral judgement (Veatch, 1989). When applied to a research context, universalisability (which has obvious affinities with the biblical injunction to do unto others as you would have them do unto you) holds that the researcher consider by what rule/action he/she would want to be treated in such circumstances.

Borchert and Stewart (1986) contend that to understand, accept and defend a moral theory is no guarantee of an ability to deal adequately with normative ethical issues. Rather than removing complexities and necessarily providing clear answers, moral theory provides a focal point from which to pursue relevant questions. Acceptance of a particular moral theory's approach to a problem hinges on formal criteria such as consistency, coherence, simplicity, comprehensiveness, and, more controversially, on such substantive criteria as the theory's capacity to account for and direct moral experience (Veatch, 1989). Earlier it was noted that even among proponents of the same principles and rules, disagreements as to the implications arise because of disputes about their meaning and weight. Bearing in mind the earlier discussion on deontological and

teleological ethical theories, let us now, in applying Ethics, focus on some examples of moral conflicts and the application of principles. Moral dilemmas are generated by conflicts among moral principles, and there are several types of such dilemmas (Veatch, 1989). The first involves a conflict between moral principles and self-interest, while the second involves an apparent conflict between moral principles, some of which indicate that an act is right, and others that it is wrong. In the third type of dilemma, there may be clear evidence that the action is right, and clear evidence that it is wrong. Generally speaking, when ethical assessments of research are conducted, both teleological and deontological principles are considered, as are a wide range of other principles and rules. Veatch (1989) for example lists the following criteria for evaluating and justifying research. 1) The results should be important. 2) There should be a reasonable prospect that the knowledge sought will be achieved. 3) Alternative methods should be explored before employing humans as research participants. 4) Risks to participants should be minimized. 5) The principle of utility (e.g. the balance of probable benefits over risks) should be taken into account. 6) Participant selection should be fair and equitable (justice). 7) Voluntary Informed Consent (either first-person, or proxy where appropriate) must be obtained (Respect for persons). 8) Considerations of privacy, confidentiality, veracity and fidelity set limits on the conduct of research. The first five conditions above focus on consequential issues, as viewed in relation to the principles of beneficence, nonmaleficence and utility. From an ethical perspective, these are viewed as necessary, but not sufficient conditions. Conditions 6-8, if absent, may morally invalidate research that satisfies the first five criteria. Essentially this means that in cases of conflict between principles, priority ought to be assigned to nonconsequentialist principles (Veatch, 1989). From this perspective, several types of research projects in HMS (see earlier), can be judged as ethically problematic. An example would be research where, in ranking consequentialist principles over nonconsequentialist ones, paternalistic actions are justified in apparent violations of the principles of autonomy and veracity. Much debate in research ethics takes place over whether paternalistic actions - refusals to

acquiesce in a person's wishes, choices and actions for that person's own benefit - can be justified (Veatch, 1989). Dworkin (1972, p64) defines paternalism as "... the interference with a person's liberty of action justified by reasons referring exclusively to the welfare, good, happiness, needs, interests or values of the person being coerced." A paternalistic act is one which serves to restrict a person's freedom to act in a particular way, and it has been contended that paternalism has strong or weak forms. Strong paternalism overrides an autonomous person's wishes, choices or actions, while weak paternalism does the same for a nonautonomous person (Veatch, 1989). If we accept this, then it is clear that weak paternalism doesn't involve conflict between beneficence and autonomy, and it follows that strong paternalism raises the more serious moral questions. In any event, in any paternalistic action in research or treatment, consequentialist issues have to be addressed, in that the net balance of benefit over harm should be maximised. Further, it could be argued that even if autonomy is overridden, there remains the obligation to choose the least humiliating, disrespectful, insulting and restrictive intervention.

Autonomy, whilst an embracing principle, may be difficult to define in some specific situations. What if a person previously accepted a course of action that is now repudiated? Does past consent in a similar situation imply probable future consent, or, put differently, can implied consent override current refusal, due to change of circumstances, defect, or limitations in decision-making. This question obviously has relevance in psychological and medical treatment and research, but in Human Movement Studies research it seems clear that current wishes override past or implied consent. Veatch (1989) states that it is difficult to hold that consent necessarily satisfies the condition of respect for persons, the danger being that the intervention itself will create or seem to imply the consent.

"Captive" Populations

This has important implications for research in Human Movement Studies and

allied disciplines, where subjects are often drawn from "captive" populations, such as patients, students, tournament participants, and team members. Such subjects may either perceive an element of coercion in participation, or an element of sanction attached to non-participation.

Olivier (1996) contends that in cases such as this, the issue becomes one of how free subjects are, rather than just one of how informed they are, and researchers need to question whether or not utility trumps the right to self-determination of subjects. In these scenarios it is necessary to consider whether the autonomous choice of subjects is valued intrinsically rather than extrinsically. In other words, is autonomy valued for its own sake or merely used towards justification for research?

Patrick (1983) states that "... critical to scientific success is a ready supply of experimental subjects ..." (637). The crucial phrase here is "ready supply", and it is acknowledged that recruitment is easiest if one has a large captive population in an institution, or presumably if one has access to such a population, e.g. patients, participants in a tournament, or students.

Coercion and sanction are the important elements to consider when recruiting volunteers from captive populations. Zelaznik (1993) reports that regulations at Purdue University preclude investigators from recruiting subjects for research from classes conducted by the investigator. The reason for this is obvious: Students could perceive that volunteering may improve their grade, or conversely that not volunteering could be to their disadvantage. Further, their IRB will not approve any study in which students are given extra credit for participation. Coercion may operate here in the sense that participation objectively improves a student's grade. This supports Liemohn (1979), who states that it is important that consent is not obtained under duress, e.g. when university lecturers call for volunteers from their classes. He states that it is important that it is clearly communicated that a student's subsequent decision will have no effect on his or

her grade. These requirements obviously limit the amount of research, and investigators will contend that it hampers their productivity and retards the advancement of knowledge. There may be sympathy for such claims, but the issue is not whether research is conducted, but whether subjects are coerced.

There is a further, more subtle form of coercion that undoubtedly takes place in research settings. In Sports Medicine for example, an authority figure (e.g. coach or administrator) could tacitly approve a study by making contact with the subjects on behalf of the researcher. Relatively uninformed individuals are likely to ignore a violation of their autonomy if the possibility of sanction is perceived. If such an authority figure gives permission for persons to be utilised as research subjects, should a researcher proceed with data collection? The answer is no. Individuals should consent, and coercion or threat of sanction should not be elements in the process. Further, such authority figures should not be involved in the research process in any way, nor should they have any access to data (Zelaznik, 1993).

Liemohn (1979) concludes that there must be good reason to involve institutionalised subjects in the research, and that it should not be done merely as a matter of convenience for the researcher. This is particularly the case with individuals who are mentally ill, mentally retarded, emotionally disturbed, psychotic, or senile, or who have other impairments of a similar nature and who reside as patients in an institution (DHEW, 1978, in Liemohn, 1979). Also, the use of subjects in prisons or other correctional institutions is severely limited, as the type of environment is inherently coercive, and consequently it is doubtful if true consent can be obtained.

The above serve as examples of Applied Ethics, but we have not yet adequately addressed the issue raised earlier, namely that of its utility and importance, Beauchamp (1984), whilst stating that the discipline has been a major growth area in North American Philosophy in the last decade, points out that a robust confidence and enthusiasm over its promise is far from universal in academic

philosophy. This is partly because many people remain unconvinced that philosophical generalizations or theories can play any significant role in applied, "real-world", situations. Beauchamp (1984) argues against these sceptical opinions, contending that "... no significant differences distinguish ethical theory and applied ethics as philosophical activities or methods" (p514). He defines Applied Ethics as

> "... the use of philosophical theory and methods of analysis to treat fundamental moral problems in the professions... Biomedical ethics, political ethics, journalistic ethics, jurisprudence, and business ethics are fertile professional areas for such philosophical activity, but "applied ethics" is not synonymous with "professional ethics." (Beauchamp, 1984, p515).

This goes beyond Gert's (in Beauchamp, 1984) standard definition of Applied Ethics, namely "the application of an ethical theory to some particular moral problems or set of problems" (p515).

Beauchamp's broader definition means that AE is not confined to a particular or special philosophical method. As such, Applied Philosophy is no different from Philosophy, in that practitioners in both areas utilize similar methods and tools. Concepts are analysed, and judged. Strategies are submitted to rigorous, critical scrutiny in order to evaluate justifications for policies, beliefs and actions. Both seek a reasoned defence of a moral viewpoint, opinion or theory. Both stress analytical skill and attempt to prevent the overriding influence of purely personal attitudes, prejudices or intuitions in making moral judgements. In short then, according to Beauchamp, the methods of Socrates are no different to those employed in AE.

If methods are similar, what of content? Gert's standard definition (see earlier) of AE seems to suggest that "Applied" Ethics consists of the application of basic principles of ethical theory to particular moral problems. So, Ethical Theory

develops *fundamental* principles, while AE treats particular contexts through *derived* principles. As such, existing theories are applied to specific situations. For example, in research contexts, informed consent is derived from the fundamental principle of respect for persons. This acceptance of derivation may explain why AE is viewed as secondary in importance to Philosophy "proper". AE is viewed as dependent on the fundamental principles generated by Ethical Theory, which is itself not dependent on other sources. Beauchamp (1984) is mildly critical of this approach, and while accepting that certain broad fundamental moral principles give support to numerous other principles, rules or judgements, he points out that support is not entailment. He contends that while principles help us to see the moral dimensions of specific problems, they are too weakened by their abstractness to give us particular duties or to assign priorities. For example, the general principles of nonmaleficence and autonomy might not give us adequate guidance with respect to problems of euthanasia and paternalism in biomedical and research situations respectively. This is of course not to deny that principles of Ethical Theory can not, or should not be applied. They can, but they are applied as premises along with other considerations. Furthermore, the principles and their derivative rules are formulated and moulded by the moral codes and judgements of everyday life (Beauchamp, 1984). If this is the case, then it may be the case that AE is flourishing because it has shown more insight into actual moral life than philosophical ethics has of late.

Hoffmaster (1992) also criticises the regnant conception of AE as "applied" moral philosophy. Why, he asks, should moral philosophy be different from other branches of philosophy in having putative practical import? As we have seen, several people disclaim such function for ethical theory, contending that it is not the business of philosophy to tell us what we ought and ought not to do.

He is critical of AE, particularly the theory-driven model in Gert's earlier definition. He (1992) considers problematic any approach that creates and sustains the impression that moral theory and practice are discrete, which is in fact the case

with most courses and texts on AE and professional ethics. Further, it should be recognized that work described as AE is not homogenous, but is varying in nature, content and quality. In noting a gradual shift away from the AE model towards a more situational/contextual approach, he is in agreement with Beauchamp (1984) who supports a case-study approach in AE methodology.

Hoffmaster (1992) also agrees with Beauchamp's (1984) view that the principles commonly regarded as constituting the core of Ethical theory (Beauchamp"s fundamental principles), are too general and vague to apply determinately to concrete, real situations. The question that arises is whether, and if so how, a principle is to be brought to bear on a particular problem. As we saw earlier, the complexity of cases in, for example, research ethics and biomedical ethics, may allow reasonable people to apply the same principle in different ways, or different principles in the same situation. Hoffmaster (1992) argues that the substantive moral work occurs in determining how a principle might impinge upon a particular problem, but the resources for addressing that issue are external to the principles themselves. He further contends that conceptual analysis can make only a limited, albeit important, contribution to practical morality, stating that

> "... although conceptual analysis can elevate a concept from the status of being 'radically confused' to the status of being 'essentially contested', it cannot go on to resolve the dispute in which that concept figures." (p1423).

This of course all serves to question the applicability in various situations of Beauchamp's (1984) "fundamental principles." Autonomy, for example, is considered a bedrock principle of AE, but four senses of autonomy may apply in research and biomedical ethics. These are autonomy as free action, autonomy as authenticity, autonomy as effective deliberation, and autonomy as moral reflection. Which sense should apply in particular situations? What if some of these conflict in specific cases? According to Hoffmaster (1992), the answer to questions such as these must turn on an assessment of underlying substantive

considerations, not further refinement of the concept of autonomy. A further difficulty is that although a multiplicity of principles may be said to apply to moral problems in a particular field, when two or more of these conflict, as they often do, AE offers no way of resolving the conflict. Hoffmaster (1992) states that AE has no hierarchical ordering of principles, and no procedure for comparing their merits. As a last resort, people often invoke general ethical theories, e.g. Kantian or Utilitarian, but the same difficulty emerges at this level, namely, conflict arises and the theory has no mechanism to resolve it.

Hoffmaster (1992) then is critical of AE as it is currently practised, and states that it does not appreciate the dynamic character of morality. Morality in real-life settings is not necessarily identified with philosophical moral theory. Rather, according to him we should conceive of morality as being situated in social, cultural, and historical milieus. This is of course bordering on relativist arguments, which are rejected elsewhere in this work. Nevertheless, he presents a strong argument in favour of understanding morality contextually or situationally, contending that

> "... actual moral decision making is situational - it is tailored to the demands of particular circumstances as well as the capacities and limitations of the persons enmeshed in those circumstances" (Hoffmaster, 1992, p1425).

The ethnographic[1] approach above thus emphasises responsivity to situational particularities. Autonomy, for example, may in fact be inappropriate in certain

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1. Hoffmaster (1992) provides the following characterisation of ethnography: "The data of cultural anthropology derive ultimately from the direct observation of customary behaviour in particular societies. Making, reporting and evaluating such observations are the task of ethnography ... An ethnographer is an anthropologist who attempts ... to record and describe the culturally significant behaviours of a particular society. Ideally, this description ... requires a long period of intimate study and residence in a small, well-defined community, knowledge of the spoken language, and the employment of a wide range of observational techniques including prolonged face-to-face contacts with members of the local group, direct participation in some of the group's activities, and a greater emphasis on intensive work with informants than on the use of documentary or survey data. Ethnography is ... closely allied with anthropology. Comparable research in sociology goes by many names, including "fieldwork" and "qualitative social research" (p1430).

instances, contrary to what the "rights-based" current weight of opinion holds. New and unique events, which are the explicit province of research, may require a different moral vocabulary to that which we customarily employ. An ethnographic approach emphasizes adaptability, contending that the theoretical perspective of AE renders it insensitive to the flexible ways in which we actually deal with moral problems. Hoffmaster (1992) states that moral decision making is more a matter of coming up with creative, responsive solutions than it is trying to apply some general formula derived from ethical theory. Further, he contends (1992) that ethical theory and AE run into trouble because they remain "stubbornly acontextual". Only by becoming involved in clinical settings, or perhaps (following Beauchamp) utilising a case study method, can applied ethicists put moral problems into context. In short, he holds that morality cannot be severed from the social, cultural and historical milieus in which moral decision making occurs.

In looking at AE from the perspective of Medical Ethics, Christakis (1992) concludes that present concepts of Medical Ethics are too detached from the clinical reality in which ethics come into play. His contention that a significant source of ethical meaning is the particular situation in which ethical issues are raised, is strongly supportive of Hoffmaster's approach (see above). He presents, and dismisses as inadequate, four models to govern transcultural clinical research. In further support for Hoffmaster's (1992) point of view, he holds (1992) that the models break down because they treat ethics in a philosophically orthodox fashion and look for the answer through what *ought* to be done, rather than through what *is* done. Configuring ethics as a set of prescriptive and proscriptive rules, and not also as a cultural system of thought that has explicative and creative functions, is inadequate. In contending that medical ethics is not the same kind of thing in all cultures, the concept of relativism is introduced. This is discussed in detail elsewhere, but briefly, what Christakis (1992) holds is that it is not the ethical rules themselves that are so important: rather, it is their *meaning.* As such, ethics do not just regulate behaviour, but in fact construe it, in the sense

that they have constructive and interpretive power. In advocating a culturally-sensitive model of AE, Christakis (1992) states

> "A contextualist perspective on morality offers a way out of the thorny methodologic and substantive issues raised by a positivist- and culturally myopic-perspective on morality ..." (p1088).

This supports French's (1987) contention that ethical questions demand to be answered not only contextually, but in terms of a dialectical understanding of socio-political reality.

Does the preoccupation in recent decades with Applied and Professional Ethics mean that we will reach definitive answers to thorny ethical questions, and does it mean that human subject abuse will cease? Unfortunately, "no" on both counts. In the application of ethics, it seems that there is an expectation that final and transcendent resolution of ethical disputes is possible. Christakis (1992) however states that ethical systems do not exist in order to eliminate ethical discourse. Rather, they provide a working framework for such discourse - a framework for the confrontation of particular situations that pose ethical problems. In short, the practice of philosophical ethics provides a mechanism for reasoned and systematic approaches to moral philosophy, not finality (Beauchamp, 1984). In an affirmative answer to the second question, it could perhaps be argued that a repeat of past human subject abuses is unlikely in today's moral climate. However, acceptance of such an argument should be approached with caution. Given the nature of research, and a "progress imperative" view of science in general, it is hardly surprising that society continues to allow and encourage human experimentation. In this scenario, it has become evident that legislation is not sufficient to curb excesses where information is demanded. It is often presumed that those who know what is ethical will behave in moral ways, but this is not necessarily so. For example, regulations on medical ethics in Germany prior to WWII were detailed and stringent, yet they did not prevent abuses from occurring in prisoner-of-war camps, indicating that neither official endorsement

nor high aspirations are enough to ensure protection for subjects. Ethics in research involving human subjects is not a settled issue. The principles we accept may be less conclusive, and the guidelines we apply may be less protective, than they appear to be (Capron, in Veatch, 1989). Constant review seems to be a prerequisite for research involving human subjects, with such research being justified by appealing to ethical principles.

HISTORY OF ABUSE IN HUMAN EXPERIMENTATION

By the turn of this century, biomedical research was already a growth industry, and with the demand for knowledge increasing at a seemingly exponential rate, scandals were inevitable. One of the first occurred in 1916 when Wiles inoculated rabbits with the treponenes that cause syphilis, which he had obtained by trephining the skulls of six insane patients and by taking a small sample of their brain. Whilst defending the research, the American Medical Association recognised that there was a need to establish ethical guidelines for research (Pettit, 1992).

Similar experiments were conducted in Germany in the 1920's, and as a result of public and professional outrage, ethical guidelines were formulated. For example, the Prussian regulations were superseded by a new set of German regulations in 1931. It is worth noting here that the response focused, as did later responses, on two issues: that of the risk of harm, and informed consent (Pettit, 1992). Faden and Beauchamp (1986) however, contend that the emphasis has historically been first to control the risks presented to subjects by research, rather than to enable autonomous choice about participation. Both considerations are central themes in the history of the application of ethical thinking in research contexts.

Despite the few examples above, there was little interest in issues such as informed consent prior to WWII. Current concerns with subject autonomy grew gradually after what could be considered a series of watershed events: the

unprecedented cruelties administered by scientist-physicians during the Nazi reign in Germany. These events were to trigger the changes in how we currently view the involvement of human participants in research (Faden and Beauchamp, 1986).

Before describing some of these experiments, it is important to note that the 1931 German "Richtlinien" (regulations or guidelines) governing research on humans were stringent and exhaustive. For example, questions of the nature of appropriate information, bona fide consent, careful research design, and special protection for vulnerable subjects were all included. Consent was mandatory for human experimentation, and laboratory and animal experimentation had to be completed before human involvement could be considered (Faden and Beauchamp, 1986; Capron, in Veatch, 1989). The abuses perpetrated are all the more remarkable when one considers the stringency of the "Richtlinien", and this illustrates that regulations and official endorsement are not sufficient conditions for protecting research participants (Olivier, 1995).

So, despite the regulations, the Nazi experiments ignored both of the central themes mentioned earlier, namely beneficence and autonomy. Research activities, using concentration camp inmates, included studies simulating low pressure environments, prolonged exposure to freezing air or water, sulfanilamide experiments where prisoners were deliberately wounded and the wounds aggravated by procedures such as the tying off of blood vessels to produce gangrene or forcing ground glass or wood shavings into the wound to test the effectiveness of different drugs. In other studies subjects were used as human incubators; prisoners were intentionally infected with jaundice, typhus, and then tracked via various research protocols. Gasoline and various poisons were administered intravenously and orally, and autopsies conducted on those who died. Others were killed intentionally for autopsy purposes. It is still not clear how many people died, but it is estimated that approximately 1750 Jewish, Russian, Polish and gypsy prisoners were involved (Faden and Beauchamp,

1986; Capron, in Veatch, 1989; Kroll 1993).

Twenty three Nazi scientists who engaged in the above "biomedical" experiments were prosecuted following the Second World War. They argued that they had conducted ethical human research, which the court rejected on the basis of medical ethics. The resultant Nuremberg Code was the first major curb on research involving human subjects, and served as a reference point for future research ethics codes. An abbreviated version of its ten ethical and legal concepts is presented below:

1 The voluntary consent of the human subject is absolutely essential.

2 The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.

3 The experiment should be so designed and based on the results of animal experimentation and a knowledge of natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

4 The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.

5 No experiment should be conducted where there is an *a priori* reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.

6 The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

7 Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disabilities, or death.

8 The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the

experiment.

9 During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

10 During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill, and careful judgement required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject. (Kroll, 1993).

Between 1930-1945 Japan conducted experiments on Chinese prisoners-of-war at a research installation named Unit 731, near Harkin. Capron (in Veatch,1989) reports that the facility was capable of producing eight tons of bacteria per month, and that experiments on humans included prolonged exposure of the liver to x-rays, freezing body parts to try various methods of thawing, infusing horseblood into the body, and vivisection. Also, experiments were conducted on the human response to anthrax, botulism, cholera, dysentery, smallpox, syphilis, typhoid, and typhus. Speculation is that at least three thousand people were killed in these experiments, and that several other similar research units were in existence at the time (Capron, in Veatch, 1989). Prosecution and conviction as per the Nazis was not the fate of these Japanese researchers. In exchange for not being publicly tried and punished, they agreed to cooperate and share their results with officials of the USA, who adopted a baldly utilitarian standpoint upon discovery of the unit and its activities. They protected the researchers from prosecution, and justified this on the grounds that the value of the information far outweighed the value of prosecution, as the findings greatly augmented scientific knowledge. Besides, they reasoned, such findings were unobtainable elsewhere due to more stringent controls on human subject research (Capron, in Veatch, 1989).

In 1932 the US Public Health Service commenced a study which involved monitoring the condition of untreated syphilis in a population of rural black males near Tuskegee, Alabama. No consent was obtained, the subjects were kept in complete ignorance of the experiment, and they were actively discouraged from seeking or receiving effective treatment, lest that interfere with the data (Capron, in Veatch, 1989). Even after 1945, when penicillin was known to be a safe and effective cure, the Department of Health, Education and Welfare failed to practice its own stated research safeguards and continued the study with an untreated control group. The study was eventually only terminated in 1972. (Kroll, 1993).

Public awareness of the need for protection of human subjects was further heightened in 1962 by reports of research at the Jewish Chronic Disease Hospital (JCDH). The chief researcher, Chester Southam, persuaded the JCDH medical director, Emmanuel Mandel, to allow research involving the injection of a suspension of live cancer cells into 22 geriatric patients who were not suffering from cancer. The motivation for the research was to discover whether in cancer patients a decline in the body's capacity to reject cancer transplants was caused by their cancer or debilitation, and it was hypothesised that each patient would reject the injected cells (as a matter of biological law) because they are foreign. Thus it was argued that no patient was at increased risk of developing cancer as a result of the injections. Although some patients were allegedly given some verbal information regarding the experiment, no consent was obtained, and no-one was told that they were being injected with cancer cells. Following the controversy surrounding the case, in 1966 the Board of Regents of the State University of New York censured Southam and Mandel, deploring their utilitarian assumptions regarding research, their disregard for subjects rights, and the manner in which deception was practised (Faden and Beauchamp, 1986; Pettit, 1992; Kroll, 1993).

In 1966 Henry Beecher took an important step towards heightening awareness of moral problems in research by conducting a literature search of major medical

journals. His findings, reported in the New England Journal of Medicine, highlighted fifty cases of ethically dubious research, with subject consent being obtained in only two of these cases (Pettit, 1992). The research cited included the withholding of effective treatment. In one case this resulted in the deaths of 23 patients from typhoid. Further examples were the injection of carbon dioxide during anaesthesia on patients undergoing minor surgery, until cardiac arrhythmias appeared, and the induction of experimental hepatitis at an institution for mentally defective children (Pettit, 1992). Beecher argued that even if only a quarter of the studies cited were truly unethical, this was still indicative of a serious situation (Faden and Beauchamp, 1986).

Beecher also cited the work of Pappworth who revealed numerous examples of maleficence and deception in research (Editorial, 1991). Many of these experiments were performed on newborn infants, children, pregnant women, surgery patients, the mentally handicapped, and the dying. The experiments generally involved persons whose consent was difficult or impossible to obtain. Pappworth concluded that researchers often take risks with uninformed subjects in situations where full disclosure of information would probably result in non-participation (Faden and Beauchamp, 1986). As Bok (1978) states, "It is no accident that much research of a questionable nature has been conducted on the most vulnerable and helpless: on children, the institutionalised, the sick and the poor" (p117).

A further major controversy developed at a New York institution for the severely retarded, Willowbrook State School. The school was overcrowded, and unhygienic conditions prevailed. In attempts to develop a vaccine for the hepatitis virus which a large percentage of the children contracted, Saul Krugman and his associates deliberately infected newly admitted patients with isolated strains of the virus. Following criticism, the researchers maintained that the children involved would receive better care than would otherwise have been the case, and that strict conditions of parental consent had been followed, including meticulous

explanations in an environment of free choice. Subsequent investigation and opinion however pointed to the fact that insufficient information for informed consent was provided to parents, with the long-term risks being inadequately described, with the forms implying that the children would receive a vaccine against the virus. A further problem area was the possibility that parents "volunteered" their children in order to secure a place for them in the hospital (Faden and Beauchamp, 1986; Kroll, 1993).

Even observational studies, seemingly less invasive than those already mentioned, can carry risks. In attempting to combat stereotyped attitudes towards homosexual men, Laud Humphreys posed as a "watch queen" (to alert offenders to the approach of police) and observed hundreds of acts of fellatio in public restrooms . He gained the confidence of some of the people he observed and enlisted their aid in the study, but with numerous others, he traced their addresses through licence plates and later, suitably disguised, deceptively interviewed them about their personal affairs. Humphreys' work was important in that the findings cast doubt on numerous stereotypes, and his reply to numerous vociferous critics was that the importance of the research easily outweighed any violation of rights of privacy and self-determination. His critics argued that the moral wrong entailed by deception of this nature cannot be justified by appeals to beneficial consequences for society. No harm emanating from this study has been reported, but potential harm can arise in two ways. Firstly, the harm from such studies can come from their intrusion alone, and secondly, from error or abuse of confidentiality in the storing and communication of results (Bok, 1978; Faden and Beauchamp, 1986). Even in questionnaires and interviews where participation seems to be a completely voluntary matter, inquiry can be improper. In institutional settings in particular, subtle coercive forces often operate, and results obtained under the guise of anonymity can be intentionally or unintentionally misused, resulting in the exploitation of individuals. Even seemingly innocuous questionnaires such as teachers' attitudes towards classroom preparation, for example, could be misused for promotion purposes if strict anonymity is not

maintained. This reinforces the view expressed earlier that when research is conducted utilising "captive" populations, authority figures should not be involved in the research process at all, and should not have any access to data, as that would violate confidentiality requirements (Zelaznik, 1993).

Milgram's research on obedience, first published in 1963, quickly assumed a position as a case study for problems of deception and consent. In studying obedience to authority his subjects were deceptively recruited, and were not informed as to the actual methodology or objectives of the research. Put simply, the experiment proceeded as follows. The subject was required by the experimenter (authority figure) to administer electric shocks to a "learner" (in reality an accomplice of the experimenter) as punishment for wrong answers in a learning process. The "learner" only simulated pain, as no shocks were actually transmitted, a fact of which the subject was ignorant. When subjects expressed doubts about administering high voltage shocks, they were instructed by the experimenter to continue. For many of the subjects, the experiment was an emotionally tense, traumatic experience, with at least one subject approaching nervous collapse at the prospect of the pain they were inflicting on the "learners". Subjects were debriefed, but critics condemned the research for the allegedly devastating psychological effects on some subjects, as well as for the deception practised and the lack of informed consent (Bok, 1978a; Faden and Beauchamp, 1986).

In a relevantly similar piece of research, in 1971 Philip Zimbardo conducted research in which paid student volunteers acted out the roles of prisoners and guards. The experiment was designed to examine the effects of a rigid institutional setting on attitudes and behaviour. Zimbardo prematurely terminated the experiment, as he observed that "prisoners" were subjected to physical and psychological abuse by the "guards", with the guards behaving in ways which brutalized and degraded their fellow research participants. He justified the study by contending that participants suffered no long-term negative consequences,

and that the results assisted the process of prison reform. Nevertheless, his critics cited emotional stress, physical degradation, humiliation, and the dubious utility of his results as problem areas.

Whilst Zimbardo did obtain consent which included disclosure of methodology and aims, it has been argued that it was abbreviated, inadequate, and gave participants little indication of the stress that they would experience. The primary questions raised here are whether obtaining informed consent can justify very risky or scientifically questionable research, and whether one can consent to what is uncertain or unknown (Faden and Beauchamp, 1986).

Partly as a response to some of the research outlined above, partly as an attempt to clarify, and in some case make practicable, the guidelines of the Nuremberg Code (see earlier), and partly as a response to perceived threats to further biomedical research, the World Medical Association (WMA) began in the early 1960's to draft a more suitable code of research ethics. The result was the Declaration of Helsinki in 1964, which, whilst enshrining the ideals of the Nuremberg Code, added the distinction of therapeutic vs nontherapeutic research, stipulating that "the interest of science and society should never take precedence over considerations relative to the wellbeing of the subject." (Kroll, 1993, p34). The Declaration requires consent for all cases of nontherapeutic research, except where a subject is incompetent, in which case the support of a guardian is necessary. Consent is not required in all cases of therapeutic research, and this can be seen as a weakness of the Declaration, particularly if a proposal passes through an inattentive review committee (Faden and Beauchamp, 1986). The Declaration has generated much debate, but at the very least it has served as a landmark or rallying point for subsequent codes of ethics, in that it served to further stimulate reflection and debate on the complex issues of informed consent and research ethics. It was a significant step by medical science towards self-regulation, in that it was imposed internally, rather than externally as in the case of Nuremberg. Finally, Helsinki and the codes it

influenced provided evidence that the principles espoused in Nuremberg should also apply to scientific investigations involving human subjects of a nonmedical nature (Kroll, 1993).

The following years witnessed an escalation from the issuing of guidelines to the establishment of review procedures. In 1966 the National Institute of Health, the Federal Drug Administration, and the Department of Health, Education and Welfare (DHEW) started to issue detailed regulations to govern human subject research in medical and nonmedical research supported by these agencies. In practice this meant that all recipients of NIH and Public Health Services (PHS) grants in the USA had to have had their research proposal approved by an ethics committee at their institution. This committee was responsible for considering the rights and welfare of subjects, the suitability of the methods used to obtain informed consent, and the potential risks and benefits of the research (Pettit, 1992). In 1971 the DHEW issued its International Guide to DHEW Policy on Protection of Human Subjects, a detailed document which extended risk protocols to include possible psychological and social harm. In 1974, the National Commission for the Protection of Human Subjects of Biomedical and Behavioural research was established, and contained a key provision charging Institutional Review Boards (IRBs) with reviewing research proposals involving human subjects. IRBs were thus now mandatory in institutions receiving federal grants. Subsequent to this legislation, various regulations and interpretations have been recommended and adopted by many public and private organisations extending policies of informed consent and protection of human subjects to any and all investigations. These include the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), the American College of Sports Medicine, the American Psychological Association (APA), the National Academy of Sciences, the Royal College of Physicians for all hospitals in England, as well as most major institutions of higher education (Kroll, 1993). In fact, particularly in the USA, the majority of universities have voluntarily adopted policies more restrictive than are required either by statute or by regulations as such (Pettit, 1992).

In South Africa, the Medical Research Council (MRC) first published its Guidelines on Ethics for Medical Research in 1979. Revised editions (1987 and 1993) reflected the further growth of the discipline of bioethics, and greater appreciation by the South African medical profession of its importance in medical practice (MRC, 1993).

INFORMED CONSENT

Elements of Informed Consent

Scientific development and technological advances have resulted in increased ability to manipulate human subjects physiologically or behaviourally. Past abuses have resulted in the enactment of prohibitive and restrictive legal and bureaucratic control, the implementation of which has led to imposing certain limits on researchers utilising human participants (Brodie and Stopani, 1990). Nevertheless, even after formal recognition of the concept at Nuremberg and the Declaration of Helsinki, the need for informed consent has not always been recognised (Editorial, 1991). Given that respect for individual rights is increasingly emphasised in society (particularly Western society), the legal and ethical imperative of informed consent has received increasing attention (Goduka, 1990), to the point where it is one of the most hotly-debated issues on the international medico-legal scene (CSD, 1993). It has been contended that it is incumbent on all researchers of the human state to consider their work not only in the light of the scientific ethic, but also with examination of those ethical issues which have, to date, been faced primarily by the medical profession (Brodie and Stopani, 1990).

The journal, Medicine and Science in Sports and Exercise (Policy Statement, 1996) holds that

> "By law, any experimental subject or clinical patient who is exposed

to possible physical, psychological, or social injury must give informed consent prior to participating in a proposed project" (pXIII).

Informed consent can be defined as

> "... the knowing consent of an individual or his/her legally authorised representative, so situated as to be able to exercise free power of choice without undue inducement or any element of force, fraud, deceit, duress, or other form of constraint or coercion." (Liemohn, 1979; p159).

Mahon (1987) states that consent can be considered to be informed when "... it is given in the full, or clear, realization of what the tests involve, including an awareness ... of risk attached to what takes place" (p203). According to Zelaznik (1993), "Subjects must be fully informed of the risks, procedures, and potential benefits, and that they are free to end their participation in the study with no penalty whatsoever" (p63).

According to Beauchamp (in Veatch, 1989), one gives informed consent to any intervention if and only if one receives a thorough disclosure about it, the disclosure is comprehended, one acts voluntarily, one is competent to act, and one consents to the intervention.

As a result of increasing concern with research ethics in the USA, the National Research Act in 1974 formulated a set of basic elements to be included in an informed consent document, and these are presented below:

- A statement that the study involves research, an explanation of the purposes of the research and the expected duration of the subject's participation, a description of the procedures to be followed, and identification of any procedures that are experimental

- A description of any reasonably foreseeable risks or discomforts to the subject
- A description of any benefits to the subject or to others that may reasonably be expected from the research
- A disclosure of appropriate alternative procedures of courses of treatment, if any, that might be advantageous to the subject
- A statement describing the extent, if any, to which confidentiality of records identifying the subject will be maintained
- For research involving more than minimal risk, explanations as to whether any compensation will be provided in case of injury and whether any medical treatments are available if injury occurs and, if so, what they consist of or where further information may be obtained
- An explanation of whom to contact for answers to pertinent questions about the research and research subjects' rights, and whom to contact in the event of a research-related injury to the subject
- A statement that participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which the subject is otherwise entitled, and the subject may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled (Kroll, 1993). What a consent form should **not** include is any exculpatory language or any other waiver of legal rights releasing, or appearing to release, an investigator, project director, or institution from liability. The consent form should conclude with a statement that the proposed participant has read the document and understands it, and should provide space underneath for his/her signature and the date.

It is recommended that informed consent be given on a written document. This is particularly the case where the element of risk is greater than usual (Liemohn, 1979), or where comprehension of the research by the subject is not straightforward. Written consent is now considered to be the norm, and should be applied in all but the most minor of research procedures (MRC, 1993). Written

consent can serve to protect subjects as well as investigators. In the case of the latter, it serves as proof that some attention has been paid to the interests of the research participants, and may in fact serve as defence in the case of litigation. In addition to providing proof that ethical issues have been considered, written consent is superior to oral in that the form itself can be used as an explanatory tool and a reference document in the communication process between researchers and participants. Concern has however been expressed about the readability of informed consent forms in exercise research (Cardinal et al . 1996). Consequently, researchers are advised to pre-test the forms readability level (and consequent comprehension) on a sample of the target audience. Witnessed consent may be particularly useful when dealing with the aged, or in situations where potential participants have intellectual or cultural difficulties in speech or comprehension, but are deemed capable of giving informed consent. In cases such as these, an independent person, such as a nurse or a religious leader, signs a document stating that the witness was present when the investigator explained the project to the potential subject, and that in the witness' opinion, consent was given freely and with understanding (MRC, 1993).

In addition to the elements mentioned by Kroll (above) and the MRC recommendations regarding written and witnessed consent, special considerations may apply in certain cases, depending on the exact nature of the research and the population being tested. These may include investigations involving pregnant women, fetuses, prisoners, children, wards of the state or any other agency, and research requiring greater than minimal risk, or deception. These scenarios will be examined in more detail in the following pages.

Autonomy

The values of individual autonomy, and the individual's right to self-determination have achieved increasing prominence in recent years, particularly in Western societies. So, for example, individual rights are emphasised and required in

research particularly in the ethical and legal imperative of Informed Consent. In the USA, for example, ethical obligations to human subjects are not just mechanical, in place because they are statutory requirements, but they have historical roots in respect for human rights (Goduka, 1990). Prevalent belief and practice thus holds that the core of the ethical problem in ensuring a subject's freedom of decision and action in any research context, is the individual's right to self-determination, which is expressed in the subject providing informed consent (Brodie and Stopani, 1990). Put differently, research and medical practice have been increasingly concerned with respect for participants/patients as autonomous beings whose needs include freedom to plan their own lives and happiness (Editorial, 1991).

What however does it mean to treat someone as an autonomous being? Firstly,

> "To show respect for such autonomous persons requires that we leave them alone, even to the point of allowing them to choose activities that might be harmful (e.g., mountain climbing), unless they agree (consent) that we may do otherwise. We are not to touch them or to encroach upon their private spaces unless such touching or encroachment is in accord with their wishes." (Levine, in Drowatzky, 1993; p25).

Put differently,

> "Respect for persons incorporates at least two basic ethical convictions: First, that individuals should be treated as autonomous agents, and second, that persons with diminished autonomy and thus in need of protection are entitled to such protection. An autonomous person is ... an individual capable of deliberation about personal goals and of acting under the direction of such deliberation." (National Commission, in Drowatzky, 1993; p26).

In moral philosophy, autonomy generally refers to personal self-governance. This implies personal rule of the self, and involves adequate understanding, while remaining free from controlling interferences by others and from personal limitations that prevent choice. In this context, informed consent based on autonomous authorisation entails that a research participant substantially understands the circumstances, makes a decision in substantial absence of control by others, and intentionally authorises a professional to proceed with the intervention (Beauchamp, in Veatch, 1989).

Academic disciplines, medical practice, and societal concerns have however been struggling with contrasting frames of reference for research. The frame discussed above is of course an autonomy model, while the other emphasises issues of welfare and harm - in effect, a beneficence model (Capron, in Veatch, 1989). So, potential risk to research participants (examined earlier) has been another driving force behind the perceived necessity for Informed Consent. This is supported by Goduka (1990), who states that the notion of informed consent was also designed to protect subjects from abuses by researchers. In medical research, for example, the patient who participates in research may not benefit personally, and may be inconvenienced or even harmed. Whatever rewards there may be, they may only be reaped by others later on (Editorial, 1991).

Respect for persons then has two rather different implications for research subjects. The first stresses respect for personal rights, whilst the second places emphasis on their personal well-being. In the first instance, respecting personal rights in either Kantian or utilitarian terms implies that researchers must provide prospective research participants with information that will enable them to decide whether it is acceptable according to their own values and goals, and they must then be permitted to freely choose whether or not to participate. The second facet of respect for persons gives rise to two obligations, namely to do no harm (nonmaleficence), and to maximise possible benefits and minimise possible harms. There may however be a collision between autonomous choice and the

benefit-maximising aspect of beneficence (Capron, in Veatch, 1989). For example, a benefit-maximising piece of research, which may have desirable long-term consequences for society, may violate an individual's right to self-determination. As Capron (in Veatch, 1989) states, this aspect of beneficence goes far beyond the categorical imperative, and in not sharing a common root with respect for persons, it is not surprising that it can easily come into conflict with that principle. One of the primary professional goals of researchers is to find what is thought to be best for others. As we have seen, this may sometimes be at odds with the rights of autonomous individuals, with these rights often given primacy in contemporary ethical and legal documents. Given this primacy, beneficence is relegated in terms of guiding the research ethic.

Knowledge, Communication and Comprehension

Of critical importance to the notion of free, informed consent, is the information supplied to the potential participant, and the level of understanding achieved through the communication process. In obtaining consent, researchers must determine if potential participants are mentally competent, and fully understand what might happen to them as a result of the research (Wheeler, 1991). Voluntary consent requires that subjects have sufficient knowledge and comprehension of what is proposed to make an understanding and enlightened decision. Knowledge includes understanding the nature, purpose, methods of the study, as well as any possible effects on the subject (Editorial, 1991). So, consent should only be elicited after a full explanation of the aims of the study, the research protocol, and the risk and possible benefits of the investigation. Brodie and Stopani (1990) state that free consent implies the ability to make a rational decision, and this requires the fullest possible knowledge and understanding of the topic of the investigation, and the procedures involved. It is therefore incumbent on researchers to provide such information, which should also stress the right to be able to withdraw at any time. In research involving minimal or more than minimal risk, a separate subject information sheet should be appended to the

consent form. The scope of this form will of course vary according to the nature of the project, but it should be presented in easily comprehensible language, without linguistic simplification serving to understate any risks involved. MRC (1993) guidelines state that the information sheet should cover the following:

I) The purpose of the investigation, the nature of the procedures, the risks (including psychological distress) and the possible benefit to the individual or to society.

ii) That the subject may decline to participate without giving reasons or incurring displeasure or penalty.

iii) That the subject will be free to withdraw at any time without giving a reason and without incurring displeasure or penalty.

iv) That the information obtained will be confidential.

v) Where the Research Ethics Committee considers that the risks of any intervention warrant it, a statement about the availability or non-availability of compensation for injury.

vi) An invitation to ask for more information.

As appropriate, the sheet may contain other information, such as:

vii) The name, address and telephone number of the person who should be contacted if problems arise.

viii) Guidance about how to make contact, in confidence, with the Research Ethics Committee.

In addition, the above statements should also be explained orally, with the potential participant being given an opportunity to discuss the issues involved. Even so, discussion may not be enough for participants to acquire sufficient knowledge to make informed decisions. They should be given time to consider the issues presented and reflect on them, and to discuss it with someone else (MRC, 1993). Research confirms that the provision of quantitative information about a project is likely to facilitate a person's decision to participate (Editorial,

1991). Put differently, a person's decision depends on the information provided. This implies that proper understanding of the consent process serves not only research participants, but researchers as well.

Coercion, Sanction, and the Use of Children as Research Participants

Consent to participation in a research project may be implied, as from an action, or expressed orally, or in written form. This however is not enough, as consent must be offered freely, without bribery, coercion or threat of sanction (Brodie and Stopani 1990). Quoting federal regulations, Zelaznik (1993) states that

> " ... an investigator shall seek such consent only under circumstances that provide the prospective subject or the representative sufficient opportunity to consider whether or not to participate and that minimize the possibility of coercion or undue influence." (p64).

Jay Katz (in Wheeler, 1991) states that research too often involves the "conscription" of humans rather than their voluntary participation. This may particularly be the case in research in HMS and allied disciplines, where the research population is often drawn from students involved in the courses. This issue (captive populations) is dealt with in more detail elsewhere, but it is important to acknowledge that current ethical practice requires researchers to respect individuals' freedom to decline to participate (Blanck et al. 1992), and to freely withdraw from participation at any time without giving reasons and without incurring any displeasure or disadvantage (MRC, 1993). The absence of coercion and sanction are thus seen as critical elements in the informed consent process, supporting autonomy and the right to self-determination of the participant. However, it is worth remembering that research participation can have important educational benefits, and particularly when the effects are relatively benign, the overriding of autonomy to some degree may be justified by educational considerations.

As mentioned, the issue of captive populations has been dealt with elsewhere, so it is now necessary to focus on obtaining consent from what could be considered a special group, namely children. Before continuing, it is worth noting that a substantial body of research in HMS and allied disciplines uses children as research participants, and there is no reason to believe that this will not continue.

Liemohn (1979) notes that research involving children is a sensitive area, and that the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1977) in the USA developed extensive recommendations governing such activity. Specifically,

> "1 The research should be scientifically sound and significant.
> 2 Studies should have been conducted on animals, adults, or older children before involving infants.
> 3 Any risks involved should be minimised.
> 4 Adequate measures should be taken to protect the privacy of subjects and their families and to maintain the confidentiality of information.
> 5 Subjects should be selected fairly." (Liemohn, 1979; p159).

According to the guidelines, parental (or guardian) permission is required up to age 18, and from age 7 it is recommended that the child's assent be obtained, following reasonable consultation. Finally, researchers should not resort to parental or peer pressure or offer special incentives just to overcome a child's reluctance to participate. Brodie and Stopani (1990) report that it has been proposed that children can only be used as research subjects if parental consent has been obtained. Zelaznik (1993) specifies the necessity for written consent, and the investigation should proceed only if the work will benefit all children, if a full risk-benefit assessment has been done, and if the work cannot be undertaken using adults. These principles are supported by the MRC guidelines (1993), which hold that research requiring children as subjects should not be undertaken

unless there is a specific need to utilise that particular population, and no other route to the relevant knowledge is possible. Further, in terms of freedom of choice, children should only be included in research if they do not object or appear to object in either words or action (MRC, 1993). Lastly, where there are cultural restraints on research involving children, these should at all times be respected (MRC, 1993).

Confidentiality

The need to keep data confidential is recognised by most ethical codes. Essentially, the principle of confidentiality serves to safeguard information elicited from research participants. It is commonly justified on the basis of three claims: a) researchers have a professional right to keep information secret, b) fairness requires respect for privacy, and c) that enhanced credibility or validity should result when a researcher has promised to keep information confidential (Blanck, et al. 1992). The data generated by research in HMS and related disciplines is, generally speaking, not particularly sensitive, to the point where it may seem that confidentiality requirements are superfluous to the consent process. Nevertheless, researchers should assume that research participants want their privacy protected. This may particularly be the case with regard to, for example, anthropometric data, biographical data, and data yielding social or psychological information. Also, as much research in our field takes place in institutional settings, where subtle coercive forces may operate, the need for confidentiality may be greater than first supposed. In institutional settings, or in research utilising "captive" populations, authority figures (e.g. coach, lecturer, or teacher) should not have access to data, as that would violate the confidentiality requirement (Zelaznik, 1993). The MRC (1993) recommends that appropriate measures be adopted to ensure the confidentiality of data generated in the course of research, with hard- and computer-data being stored with particular care, and being encoded so that the subjects involved are unidentifiable to third parties. The American College of Sports Medicine (Policy Statement, 1996) holds that a

consent document should include an instruction that, in the case of questionnaires and interviews, the subject is free to deny answering specific items or questions. Also, if a subject is to be videotaped or photographed, this should be disclosed in advance, with the subject being informed as to access to, and use and storage of the material. Investigators may feel that paying excessive attention to confidentiality requirements hampers research, but the opposite may in fact be true. In reviewing research on the effect of confidentiality assurances to subjects, Blanck **et al.** (1992) state that assuring participants of confidentiality is not simply for their benefit, but may increase the likelihood that they will be honest and open in their responses, and they conclude that research suggests that confidentiality can attenuate evasive answer bias. Of some concern to investigators, particularly where sensitive data are involved, is the fact that protection of confidentiality can sometimes present legal dilemmas, particularly in a climate of shifting ethical standards. Personal, social or institutional demands may be made on researchers to disclose data, and the possibility of being subject to a court's subpoena power exists.

Deception

Many studies, particularly in the behavioural sciences, utilise deception or concealment in their methodology, with such studies routinely being approved by IRBs. The issue of deception needs to be more closely examined, as it could be argued that the terms "informed consent" as defined earlier, and "deception", are mutually exclusive. Despite acknowledging the desirability of consent, researchers often complain that consent alters the phenomenon studied to an unacceptable extent (Faden and Beauchamp, 1986). (For examples of deceptive research, see section on the history of human subject abuse). Classic deception research takes many forms, the bottom line however being that subjects' awareness, perception, or understanding of the purposes and procedures of the activity is interfered with in some way. The subject may be lied to outright, given misleading information (e.g. attaching false importance to irrelevant details and

no importance to the most essential), or the amount and type of information communicated to potential subjects may be limited or withheld entirely until after completion of the study (the latter commonly referred to as concealment) (Landers, 1979). So, while the ideas of obtaining informed consent and obtaining research data often clash, particularly in psychological research, it is nevertheless acknowledged that, unfortunately for some investigations, fully informing the subjects may invalidate the research (Liemohn, 1979). Several rationales have been advanced for either misleading subjects or concealing information from them. One is that, in the absence of such procedures, the sample might be biased so that only the most compliant of individuals, or those already predisposed to certain behaviour patterns, would agree to participate. Another is that if subjects were fully or accurately informed about the purpose and procedures of the activity and experiences to be anticipated, valid data could not be obtained. Landers (1979) reports that there is mounting research evidence in support of this second rationale, which is of course utilitarian in nature. Particularly in studies where the variables evoke attitudinal responses that could bias the dependent variables, it is believed essential that subjects should be naive about the researchers' manipulations so that they will react spontaneously to the variables under study. In conditions such as these, the desired aim of the researcher is to achieve realism and control at the same time (Landers, 1979). Despite several controversies, official policies have not discouraged deception and concealment in research, with IRBs permitting studies as exceptions to informed consent guidelines, partly due to the rationales outlined above, and generally only after it has been determined that subjects are not exposed to physical, social, or psychological injury. In addition to the welfare of subjects, utilitarian concerns about the value of the knowledge to be gained may be factored into the decision equation, and regular review of the study may be advised. After much refinement over several decades, the APA's 1981 Ethical Principles (in Kahn, 1984) holds that the ethical costs of deception must be balanced against the knowledge to be gained, and notes that methodological requirements of a study may make the use of deception necessary. Before

conducting such a study, the investigator has a special responsibility to (i) determine whether the use of such techniques is justified by the study's prospective scientific, educational, or applied value; (ii) determine whether alternative procedures are available that do not use concealment or deception; and (iii) ensure that the participants are provided with sufficient explanation as soon as possible (Kahn, 1984).

Liemohn (1979) states that if the investigator finds it necessary to withhold information, the IRB should be informed, and appropriate justification provided. Importantly, nondisclosure of information must not be used to ensure the participation of subjects. Finally, consistent with APA requirements above, the use of concealment or deception requires debriefing of the subjects by the investigator (Landers, 1979; Liemohn, 1979).

What is meant by the term "debriefing?" Blanck et al. (1992) state that in its current usage in psychological research, the term emphasises a kind of catharsis after treatment. The purpose of the practice is to remove misconceptions and reduce anxieties generated by research, and to leave participants with knowledge, a sense of dignity, and a perception that their time has not been wasted. Debriefing can also be designed so that researchers receive personal feedback about their project, thereby serving to contextualise the results. Where methodology necessitates deception or concealment in a research project, debriefing may serve to negate potential feelings of distrust in interpersonal relationships that may arise due to the deceptive protocol practised. The implication here is that such distrust might negatively influence future participation in similar projects, but Blanck et al. (1992) contend that there is little evidence of such changes in behaviour. Debriefing can also provide a valuable service through feedback about performance and response, and this is probably particularly the case in research on physical performance undertaken in HMS research. In this sense, debriefing will have a positive impact on a subject's personal sense of participation and contribution. From the point of view of the

researcher, debriefing can serve to access the perceptions of participants, and this sort of information may be invaluable in assisting the accurate interpretation of results, particularly in the behavioural sciences. Also in this vein, debriefing can provide researchers with leads for future research, and may help to identify problems and limitations in current protocols.

Theory and Practice

Is the practice of informed consent consistent with the lofty expectations of the theory underpinning the process? Jay Katz (in Wheeler, 1991) has been moved to say that at present it is largely a charade. One of the most telling criticisms of informed consent relates to subject understanding, and the communication process. This has broader ramifications, for if adequate comprehension is not present, then coercion may come into play, and a research participant's right to self-determination is violated. In some cases then, a legitimate doubt may be entertained as to whether "volunteers" are in fact volunteers (Mahon, 1987). This is supported by research by Scocozza (1989), who in a case study found several discrepancies between theory and practice. Some of those related to inadequacy of information supplied, whilst others were procedural. In some cases too much information may be presented, with this having the effect of overwhelming the participant, or ensuring compliance through a sort of gratification response to assumed shared expertise.

Even if close attention is paid to the communication process, full understanding (and consequently free participation) will not always be possible. Reasons may include lack of sufficient background knowledge, or reduced ability to process or evaluate the information given, and this suggests that the conceptual ideal of informed consent does not necessarily coincide with reality (Brodie and Stopani, 1990). Subjects may thus often not recall sufficient information from the consent process before volunteering, but it has been suggested that attitudes rather than factual knowledge may provide the main influence for a subject's decision making

(Brodie and Stopani, 1990). Gray (1975) also presents evidence that subjects may participate in research despite viewing themselves as unwilling participants, and states that, for the projects reviewed, existing procedures failed to guarantee subject rights. This is supported by Scocozza (1989) who states that in medical research settings, doctors have a tendency towards "persuading" or "overpowering" patients for the sake of their research protocols. In many cases then, investigators will find it convenient to skirt procedural requirements in the consent process, in so doing merely paying lip-service to the concept (Olivier, 1996). If this is indeed the case, then it is naive to base the regulation of human experimentation on procedures which operate largely on the assumption of good faith, and continuous monitoring is needed (Gray, 1975). The ideal of full, equal understanding between subject and researcher is however not always possible, and cannot unconditionally form the basis for codes of ethics. What is necessary then, according to Scocozza (1989) is legislation that protects individuals while at the same time permitting sanctions as well as full publicity in the administration of research protocols. Following a deontologic line, he (1989) concludes that "... it is imperative that we return the control of the individual to the individuals themselves." (p293). Beauchamp (in Veatch, 1989) agrees that autonomy is the single most important moral value for informed consent. However, he cautions that in any approach to decision making in research contexts, it is important that autonomy be neither overvalued nor undervalued. Whilst not advocating relativism, he states that

> "... before we reach to condemn the writings and practices of the past, it is well to remember that informed consent is still under development and that our own failures may be no less apparent to future generations than are the failures that we find with the past. The autonomy model is, in the light of history, still a novel and provocative idea and perhaps a model that must always compete with the beneficence model ..." (p193).

To conclude, many problems in the theory and practice of informed consent have been identified and evaluated. Difficulties with adequate compliance exist, and it is unlikely that any single Informed Consent document could present all the relevant information required to constitute a legally impregnable situation. Also, adoption of the process in a particular piece of research does not automatically sanction the research as ethical (Kroll, 1993).

Nevertheless, the imperfections of the concept should in no way lead us to believe that the process should be discarded.

ETHICAL RELATIVISM, INFORMED CONSENT AND TRANSCULTURAL RESEARCH

Earlier it was noted that Bioethics has become a growth industry, and that there seems to be considerable consensus about the moral importance of informed consent, particularly in medical research (Ijsellmuiden and Faden, 1992). French (1987) contends that debates on research ethics have tended to emphasize respect for persons, beneficence, and the argument that a researcher's responsibility ends with the publication of objective findings. Hoffmaster (1992) concurs with the first area, stating that the most prominent tenet of orthodox bioethics is its individualism, manifested by the conspicuous preocuppation with the notion of autonomy.

Cultural and Ethical Diversity

Is this preocuppation with autonomy in research settings universally accepted? Ethical rules are intended to govern desirable conduct, and are often based on the religious or philosophical beliefs of a given set of people. Therefore, research ethics might, *a priori*, be expected to vary cross-culturally, and ethical conflict is most likely to emerge in situations where the researcher and subject come from different cultural backgrounds (usually Western and non-Western), respectively

(Christakis, 1992). Given the importance and growth of biomedical research, and society's seeming acceptance of what could be termed a knowledge imperative or research imperative, it is likely that the trend will be towards more frequent transcultural contact between investigators and research participants. South Africa is no exception to the trend, with the countrywide Sports Information and Science Agency (SISA) talent identification programme providing an example, and serving to highlight the importance of a cross-cultural perspective on research ethics. So, it is important to question whether it is possible (or desirable) to formulate ethical rules governing the conduct of investigators from one cultural background performing research on subjects from another. At the heart of this question lies the problem of ethical universality versus relativism. Universality holds that the principles governing research are the same wherever research is conducted, while relativism contends that, since ethics are socially constructed, they will vary according to the cultural setting in which they are formulated (Christakis, 1992).

The relativist contention is strengthened by the fact of ethical diversity, as is evidenced by reports from the first European Bioethics Summit, convened in Madrid by the Council of Europe. Here, workshop discussions established that national approaches to bioethics are more divergent than has been suspected, and that similarities are largely superficial (Rogers, 1992). If this is the case in Europe, differences between Western and non-Western countries may be even greater.

Obtaining informed consent in transcultural contexts may thus pose special problems for investigators. In fact, the need for, and appropriateness of the essentially Western notion of informed consent has been called into question. Goduka (1990) for example has called for a re-evaluation of informed consent and its relevance to certain societies, contending that there are contradictions inherent in any attempt to apply ethical codes designed in Western, liberal countries to research in authoritarian contexts. In cases such as these, she argues, there are

disjunctures created when ethical codes designed in one cultural and political context are applied to a quite different one. For example, in many African countries, people are poverty-stricken, illiterate, ignorant, vulnerable, and powerless to make individual decisions and choices regarding their own lives. Compounding this is the fact that the notion of community rights may supersede that of self-determination in such communities.

Put differently, it has been contended that in African culture individuals perceive themselves as extensions of the family and as intermediaries between ancestors and future generations, rather than as individual persons in their own right (Ijsellmuiden and Faden, 1992).. Christakis (1992) concurs, stating that Western societies stress the individualistic nature of a person, and that they place much emphasis on the individual's rights, autonomy, self-determination, and privacy. This however is at variance with the more relational definitions of a person found in many non-Western societies, which stress the embededness of the individual within the community, and define a person by means of relations to others. In the latter scenario, since the right to self-determination may be undermined, the consent of the individual may be viewed as non-essential in certain cultural settings. The strong emphasis on autonomy is thus neither unchallenged nor necessarily accepted, particularly in Africa. Here the challenge centres on the necessity and validity of extrapolating Western ethical guidelines to a different cultural setting (Ijsellmuiden and Faden, 1992). This view seems to be gaining credence in some quarters, particularly with calls for the Africanisation of research in this country. In this vein, Goduka (1990) would argue that the Western notion of consent may be inappropriate in some contexts. She rightly focuses on the importance of understanding and comprehension in the consent process, stating (1990) that false assumptions may be made regarding the ability of subjects being able to understand the intent of the form. In fact, in disadvantaged contexts subjects may not have enough knowledge to understand the research jargon and the complexities of the research, and may not be sufficiently aware of the freedom to choose to participate or not. Consideration needs to be given to access of

subjects to basic resources, such as education, as well as to the cultural and political climate. Goduka (1990) provides the example of black people in apartheid South Africa, and contends that society was so rooted in authoritarian relations, that subjects could not meaningfully exercise choice. This example could of course extend to any authoritarian country or society, where the perception could exist that refusal to participate may lead to problems.

> "Thus, when one conducts research among impoverished, illiterate, and politically oppressed people, the contractual individualism at the core of informed consent is very limiting. It does not help one grasp the enormous gap between the researcher and those studied." (Goduka, 1990; p334).

Cultural Imperialism and Context

These views are supported by those who reject what they would term "cultural imperialism". Biomedical research has Western (Judeo-Christian) origins, and is based largely on the technocratic culture of the practitioners, not the participants. Looking specifically at the practice of Social Science in Third World countries, Hall **et al.** (in French, 1987) contend that research models are justifications for the world capitalist system and the hegemony of the United States, and that claims of universal scientific truth are in fact only arrogant impositions of the dominant culture of some Western nations. In this sense, it is contended that there is no sense in which people have any real and conscious determining role in their future. French (1987) concurs, stating that in the positivist approach to research that is generally practised, "... research is something that is done to people, perhaps for people, but the stance of objectivity prevents it from being done together with people or by them" (p18). As such, research is seen as an expression of power by the researcher over the subjects, with results often determining political or economic policy. Bok (1978) agrees that when Western notions of research are transplanted to different cultural contexts, the risks may be differently understood and assessed on all sides. Put differently, those who

run the greatest risks may know the least about them (or the potential benefits, for that matter), or have insufficient power to impose regulation of any kind on the investigators. In this regard, French (1987) is of the idealistic opinion that research should be directed by the interests of the whole community in which it takes place.

In making this call for "action research", French (1987) states that "Ethical questions demand to be answered not only contextually, but in terms of a dialectical understanding of socio-political reality" (p16). This is strongly supported by Hoffmaster (1992) who holds that ethnographic work reveals that morality must be understood contextually. That is, actual moral decisionmaking is situational - decisions and acts are tailored to the demands of particular circumstances as well as the capacities and limitations of the persons enmeshed in those circumstances. Miles (1989) concurs, stating that "When research is being conducted in Third World settings, the context may be even more significant than the findings" (p853). If this is the case, then researchers will encounter numerous problems when attempting to apply Western ethical codes to authoritarian contexts. Goduka (1990), in supporting the above relativist approach to research ethics, states that ethics also rest on the individual's own personal, philosophical and/or religious and professional code. She (1990) concludes that Western ethical codes are irrelevant to research in authoritarian contexts, and that Western academic institutions should consult black South African scholars, among others, to establish research ethics guidelines. Finally, she states (1990) that there is a need to Africanise research to meet the needs of Africans, rather than to adopt Anglo- and Euro-ethnic ethics and methods of research.

So, does this mean that transcultural research should be avoided? This might satisfy relativist objections to "technocratic, positivist, cultural imperialist" research, but would be a specious solution, particularly given the universal ascendancy of Western medical science. Further, suggesting that resident

researchers in developing countries apply their own local ethics is problematic, in that it is more than likely that those researchers, partly through their training and partly through being part of a cultural elite, have adopted the established research ethics and practices of their disciplines. As such, the ethics governing research practice will not be indigenous in the true sense. Another solution is that transcultural research should meet the ethical requirements of both cultures involved, which involves a "... commendable respect for the beliefs of the subjects' culture." (Christakis, 1990). This is of course a relativist position, where no assessment of ethical systems is made, with all such systems being considered satisfactory.

Relativism

Put simply, in its crudest form, ethical relativism holds that in different cultures, the moral judgements of each culture are correct. That is, particular acts can only be judged morally good or bad with reference to the specific culture in which they occur. Relativism in this case assumes that nothing is inherently right or wrong, that no moral principles are inherently legitimate. Relativist thinking supposes that actions are defined as right or wrong by the people who act, and by the context in which the action take place. It is outside the scope of this work to do justice to a critique of relativism, but several theoretical and practical problems should be noted.

Crude ethical relativism consists of 3 propositions: that "right" means right for a given society; that this is to be understood in a functionalist sense[2], and that therefore it is wrong for people in one society to interfere with or judge the values of another society. An immediate problem is evident in that the last proposition employs a non-relative or absolute sense of "wrong". There is thus a slide from

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2. In this sense "functionalism" means the function that a particular practice of a society has in maintaining the structure/discipline of that society, e.g. polygyny.

presenting values as relative to presenting them as absolute, and this is not consistent with what the theory allows. For example, claiming that it is "right" for society A to experiment on vulnerable minority groups comes to mean that it is "right among" society A, and this in turn means that performing such experiments in society A "is right", i.e. we have no business interfering in that practice. There is thus a logically inconsistent attachment of a nonrelative morality of non-interference to a view of morality as relative.

Ethical relativism obliges tolerance towards other cultures, and while tolerance is a noble aim, it becomes problematic when linked to relativism. Significantly, relativism is not value free, for a *value* judgement is contained in its call for tolerance, in that it asserts that we *ought* to respect other value systems (Christakis, 1990). This is an absolute, universal judgement, so relativism advocates universality, which is of course logically absurd.

Relativists claim that actions are justified by the social context, i.e. by the thoughts and beliefs that the particular society has. Put differently, what is true depends on what is generally accepted in a culture. So, if you are a Papua New Guinea native, then it is true that there are 212 gods, but false if you live in Luton (Whyte, 1993). This sort of subjectivism allows all disputes to be ended amicably by declaring that what is true for me needn't be true for you. Relativists claim "but it is true for them", but this solves no problems and means merely they believe it is true. It is one thing to believe that water naturally flows uphill, but it would be quite another for this actually to occur. Mere belief (it is true for them) rarely solves problems. For example, no end of disbelief will get rid of the HIV virus. On the contrary, it will only help to spread it (Whyte, 1993). Similarly my belief that I can lift a car off my injured friend's leg may psychologically assist me to do so, but no amount of belief will alter the truth that I cannot do the same with an articulated truck. It is important to note that here the truth or justifiability of a belief is being considered, not the fact that people have a certain belief, or that this may be functional for them.

Turning to the issue of whether an act is justified if it is functionally valuable for a society, relativism suffers here in the identification of "a society". If you use values to define a society then your propositions become tautologies. Defining a group by values which are necessary to them becomes a tautology, because if they weren't there then you could change the society which you have just defined. This illustrates the difficulty of defining societies in functionalist terms, and it is evident that functionalist propositions do not in themselves provide solutions to moral disagreements.

Relativism has been said to offer the warm satisfaction of woolly mediocrity. One opinion is as good as another (Punchline, 1992). This raises the problem of error. There is of course no possibility of error if you are member of the group whose beliefs determine what is true (Whyte, 1993), unless of course you change your group or your opinion. For instance, if you now believe that subjecting children to invasive experiments is permissible if the overall consequences are beneficial, you are entitled to that belief, it is true for you, and probably functional for you as a researcher. If next year you believe that the rights of minors should be protected, it is similarly true etc. So errors are impossible. Or are they? Of course individuals are often wrong, and majorities within groups or societies can be wrong almost as often. If relativism is in fact right, then it would clearly be pointless for individuals or minority groups to disagree with the majority view. So, if the SA Federation for Movement and Leisure Sciences advocated an ethical code that permitted violations of the rights of subjects, it would clearly be pointless for individuals or a minority group to protest, for according to relativism they would be wrong by definition.

Christakis (1992) also raises several research related practical problems that stem from the relativist position. For example, if research is designed so that it independently meets the ethical expectations of both the subjects and the researchers, then it conforms to the relativist model. It is however possible that, under some third standard, the research is considered unethical. Does this entail

the position that all research projects should meet all possible ethical standards for research? A further problem is that the model provides no guidance for resolving conflicting ethical expectations. If neither system is superior and the two conflict, which judgements should hold sway? If no resolution of the conflict is possible, what should happen if the research is considered important or essential? If resolution is not possible, is the investigator at liberty to conduct the research elsewhere? Finally, Christakis (1992) points out that to meet the ethical prescription of this model requires a knowledge of local ethical expectations. Who then should decide when all the necessary ethical expectations have been met? Presumably, a paternalistic decision from the investigator would be deemed not good enough.

Universality, and Cultural Sensitivity

This is of course all in contrast to the view that basic ethical principles exist, with such systems leading to general judgements that serve as the basic justification for prescription and evaluation of human action (Drowatzky, 1993). This normative approach is evidenced in the promulgations of the Nuremberg Code and the Declaration of Helsinki (see earlier), which proposed universal laws to which all individuals could be held accountable. Both these codes gradually assumed an aura of universality, and have been applied in a wide variety of cultural settings. Despite the earlier critique of relativism, it is however acknowledged that codes such as these, which stress duty, are not necessarily appropriate in all settings. As a result of such limitations, new guidelines were developed jointly by the Council for International Organizations of Medical Sciences (CIOMS) and the World Health Organization in 1982. Christakis (1992) states that these guidelines have emerged as the leading articulation of ethical standards for specifically transcultural research. According to these guidelines, when research is conducted by researchers of one country on subjects of another, the protocol should be submitted for review by the initiating agency, and should be no less stringent than they would be for research carried out in the initiating

country (Christakis, 1992). Whilst stating that "The basic ethical assumption in medical research is the autonomy of the individual ...", the South African MRC Guidelines on Ethics for Medical Research (1993) states that the social and cultural environment should be taken into consideration in all circumstances. Specifically, "Research programmes should treat people as part of a community while simultaneously respecting their individual autonomy. This is of paramount importance for medical research in an African context" (p3). In addition to the elements of informed consent presented earlier, this entails that "Clear and understandable verbal communication is required with factual data as well as emotional and cultural considerations." (MRC, 1993; p3).

Olivier (1995a), in rejecting relativist arguments and agreeing with the above, contends that the Western notion of first-person informed consent should, as far as possible, be adopted as a universal practice. It can be argued that, particularly in Africa, consent obtained from tribal leaders or government officials has been given in the best interests of the participants. However, besides the fact that such an assertion dangerously assumes homogeneity in African culture, it indicates a condescending and paternalistic approach that is contrary to the principle of respect for individuals. As Ijsellmuiden and Faden (1992) point out, "The assumption that adults in developing countries are mentally incompetent to give informed consent to participation in research is false if not downright insulting." (p832). In fact, they argue that African societies are changing in ways that make informed consent requirements more rather than less appropriate (1992). They do state that researchers should not necessarily forego obtaining consent from authority figures, e.g. tribal leaders, but that such consent is not a valid substitute for consent from individual research subjects. It should not be assumed that consent obtained from tribal leaders or government officials has been given in the best interests of the research participants. In cases where cultural differences exist, researchers may need to make an extra effort to communicate effectively with subjects. Cultural differences do not necessarily constitute insurmountable barriers to the obtaining of valid consent or refusal. On the contrary, Ijsellmuiden

and Faden (1992) argue that, with extra effort, effective communication between researchers and subjects is possible. Further, they contend that claims about cultural or communication gaps overstate the comprehension required to have an adequate understanding of the implications of research participation.

Olivier (1995a) argues for a universal research ethic based on the principle of respect for human beings. While he accepts that perceptions of personhood may vary, it is argued that a deontologic conception of research ethics serves both individuals and society. The deontologic conception stresses treatment of persons as ends in themselves, not merely a means, and as such gives rise to the necessity for informed consent. If we evince respect for a person's autonomy, in this case the right to choose whether or not to participate in a research project, and we do this in conjunction with a consideration of relevant cultural factors and obtain other, perhaps necessary, forms of consent, then we are less likely to violate the person's autonomy and their society's cultural values. On the other hand, if in cross-cultural settings we ignore either form of consent, we may run into ethical conflict. If forced to decide which form is important in a universal sense, he advocates first person consent. He contends that this is not done from a biased Western perspective, but because in research settings it seems unlikely that individual decisions to participate (or not) would actually harm society. Even if decisions not to participate were taken collectively and subconsciously, the worst that would happen is that the society would be no worse off than it was, i.e. nothing inherently maleficent will have occurred.

It may be that cross-cultural dialogue is difficult to achieve, but that does not mean that the effort should be abandoned. Perhaps "We must navigate ... between the simplicity of ethical universality and the evasion and complexity of ethical relativism ..." (Christakis, 1992). Nevertheless, the obligation to abide by the elements of the Western notion of Informed Consent expresses important and basic moral values that are universally applicable, regardless of variations in cultural practice.

INSTITUTIONAL REVIEW BOARDS

By the turn of this century, biomedical and behavioural research was a steadily growing, if not actually a boom, industry (Pettit, 1992). As we have seen, this industry produced abuses and scandals, the result inevitably being legislative responses such as the Nuremberg Code and the Helsinki Declaration. Subsequent to this, Institutional Review Boards (IRBs), or Ethics Review Committees, or professional Codes of Ethics were formed on a widespread basis, either as a result of legislation (as in the USA), or voluntarily (as in the Nordic countries). In the USA, for example, IRBs were created by law and specific federal regulations govern their conduct. Annas (1991) states that these committees have changed the face of research in the USA by requiring investigators to justify their research on humans to a peer review group prior to recruiting subjects. (As an aside, he notes that they have not necessarily made research more ethical). So, in the USA, the composition of IRBs and the requirements for assurance of compliance to legal Department of Health, Education and Welfare (DHEW) procedures is specified. On behalf of the institution (e.g. university, research facility etc), the IRB gives assurances to DHEW, meaning that the IRB is responsible for all institutional research in which human beings are used as subjects (Liemohn, 1979). By contrast, in Finland, Norway, Denmark, and Sweden, IRBs were established voluntarily at various medical facilities in the 1970s and 1980s. The composition and functions of these committees varied, and by the early 1990s, none of the Nordic committee systems functioned under the auspices of state legislation. This meant that in the absence of such legislation, committees were exempted from public control and sanctions (Scocozza, 1989). In South Africa, all medical research involving healthy people and patients should be subject to independent ethical review, and this is accomplished by a Research Ethics Committee of the MRC, or by a committee granted accreditation by the MRC (MRC, 1993). Research in Human Movement Studies and allied disciplines in South Africa is not governed by any research ethics legislation, other than that which may operate at individual institutions or

laboratories etc. This of course gives investigators involved with human subjects a free hand in many areas of study.

To summarise and generalise, following public outrage at revelations of abuse of human subjects, guidelines for conducting research were established. These were both voluntary, and imposed from without. An escalation of public reaction led to review requirements by committee, particularly where research is funded either by public or institutional money. Finally, and this is cause for pessimism among some scientists, review may be required for any and all research (Pettit, 1992). Nevertheless, the MRC (1993) maintains that such committees are of crucial importance in regulating research and preventing abuses, since investigators should not be the sole judges of whether their research conforms with generally acknowledged ethical codes and practices.

This supports the view of Brodie and Stopani (1990), who state that compulsory review by an ethics committee

> "... prevents the researchers from suffering the delusion that they can adopt the attitude of an ideal ethical observer, shaking off all the constraints of group and individual pressures and loyalties and consequently denying themselves the frame of reference necessary for any ethical decision." (p148).

They contend that no investigator can be totally objective in the sense of being free from personal belief and conceptual bias, and that the distancing and isolation of an IRB, coupled with a wide range of membership, serves to improve the objectivity of ethical decision making.

Composition of IRBs

Brodie and Stopani (1990) advocate that a wide variety of expertise and skills be represented on an IRB, which can include statisticians, administrators, lawyers,

ethicists (who may be members of the clergy), and lay members. MRC (1993) guidelines add the following to this list: medical members (including experienced clinical investigators, and a general practitioner), non-medical workers or scientists, a nurse, and at least one person not practising or trained in any medical or paramedical discipline. Also, the committee should be comprised of people of both sexes. There is some controversy over whether or not the committee should include persons with expertise in areas not specifically directed to the autonomy issue (Rosnow **et al**. 1993), but it has become increasingly accepted that evaluating the technical (not just the ethical) merit of a study is within the purview of IRBs. In recent years, the role of these committees has been expanded to include issues not specifically related to the autonomy of research participants. The committee should preferably be of manageable size (i.e. not more than 12 members), should have the power to co-opt additional members with specific expertise for particular meetings, should be provided with adequate administrative support, and duration of membership should be a renewable period of 3-5 years (MRC, 1993). This seemingly lengthy period is considered necessary for members to absorb the ethos and to develop skills of ethical review, and this is supported by the personal experience of Scocozza (1989) who notes "It was consequently some time before I had familiarized myself with the committee's work and found my own platform." (p285). New members of IRBs should be provided with appropriate core literature, and training where necessary (MRC, 1993).

Functions and Duties

The MRC (1993) contends that Ethics Committees serve to maintain ethical standards in research, to protect research participants from harm and exploitation, to preserve the rights of participants, and to provide reassurance to the public that the above objectives are being attended to. Further, committees should take cognizance of the fact that research benefits society, and should take care not to hinder it without good cause. Also, committees should serve to protect

researchers from unjustified criticism.

There has been much discussion about the specific functions of IRBs, with the MRC (1993) stating that committees should focus on I) the nature of the proposed investigation; ii) the possibility of the research participant being harmed; and iii) the nature and practice of the informed consent process. This is consistent with guidelines in the USA, where the DHEW has stipulated that an IRB must review and approve any research activity involving human subjects. According to the DHEW, the following points, in particular, should be assessed:

1 The risks to the subject are so outweighed by the sum of the benefit to the subject and the importance of the knowledge to be gained as to warrant a decision to allow the subject to accept these risks.
2 The rights and welfare of any such subjects will be adequately protected.
3 Legally effective informed consent will be obtained by adequate and appropriate methods in accordance with the provisions of this part.
4 The conduct of the activity will be reviewed at timely intervals. (DHEW,1975, in Liemohn, 1979).

With regard to record-keeping, for issues other than confidentiality requirements, guidelines are either vague or nonexistent. In the light of this it is suggested that IRBs formulate their own rules regarding documentation and record maintenance, including what is necessary, where and for how long it is to be stored, who has access, and how records are to be disposed of.

As stated earlier, some controversy exists regarding the functions and practices of IRBs. One faction holds that the primary functions of such committees has become to protect the institution, and to respond to legal changes and challenges

rather than to do anything a philosopher might label "ethics" (Annas, 1991). A different view holds that the main responsibility of IRBs is to ensure that the potential benefits to research participants (and society) will be greater than any risks entailed through participation (Rosnow et al. 1993). Gray (1975) states that we should raise the question of whom the review procedure is designed to serve. Following the above two factions, should it serve to protect subjects, or to protect investigators and funding agencies? He (1975) contends that some elements of both seem to be involved. A further issue is that of whether or not evaluating the technical (e.g. methodological) merit of a study is within the purview of IRBs. In this sense the role of IRBs has changed. Historically they were primarily concerned with issues surrounding the preservation of subjects' autonomy such as the informed consent process, and confidentiality. Recently however, their role has expanded to include issues not specifically related to participant autonomy, to the extent that a broad range of design issues is now included in many IRB discussions (Rosnow et al. 1993). This supports Brodie and Stopani (1990), who state that the variety of titles adopted by committees mirrors the variety of roles that they have assumed. They may for example conduct a scientific peer review, a statistical review, an examination of compensation claims or subject complaints, they may need to enforce sanctions against offenders, and perform any combination of these and other, related functions. So, IRBs are paying increasing attention to the methodology of the studies and the relevance/significance of the topic, as well as the competence of the investigator/s in the proposed areas of study. It seems certain that the functions of IRBs will continue to expand. These committees, for example, are the bodies which will have to deal with sensitive issues introduced by improvements in knowledge and technology, e.g. cloning. If this is accepted, then the scientific soundness of a study is a relevant issue for IRBs, even if members feel ill-equipped to judge such issues (Kroll, 1993). This can however be questioned. "Necessarily" is a logical term implying entailment, and a flawed conceptual process regarding methodology, for instance, does not necessarily translate to bad ethics. Nevertheless, Bok (1978) states that much depends on the standards of the decision makers. Ideally, IRBs should engender

trust in individuals and society alike, and she states (1978) that "... a committee or institution will have to adhere to standards that reasonable persons would regard as giving adequate protection." (p124).

Effectiveness, and the Restrictive Nature of IRBs

A question however remains as to the effectiveness of IRBs in achieving their stated aims. Gray (1975) feels that committees neither have a significant positive effect on proposals, nor do their procedures and practices adequately protect the rights and welfare of human subjects. He (1975) raises the issue of evasion by investigators, stating that they might find it convenient to skirt procedural requirements, and might neglect to seek truly informed consent from subjects. In short, it may be that investigators view the procedure as a "necessary evil", something that is at best tolerated, and at worst circumvented. In interviews conducted with subjects/patients conducted after a drug infusion study, Gray (1975) reports that 39% learned only from the interview that they had participated in research. Most of the others felt that they did not understand one or another aspect of the research (including the potential risks of labour inducing drugs), and four felt that they had been coerced into participation. The above results were found after committee approval and written informed consent had been obtained, indicating that IRB procedures may not necessarily assure ethical practice in research. Gray (1975) thus advocates that committees get more involved in periodic reviews of studies that they control. In this role, they will not merely rubber-stamp proposals, and he contends that mere legitimisation is not the proper role of IRBs. It is of course possible that the measurement tools utilised by Gray predisposed respondents to answer as they did, and a closer examination of the validity of his methodology would be required before generalising on the effectiveness of IRB procedures. However, it is worth noting that despite Gray's reservations, the IRB process generally ensures that research participants are better protected than they would otherwise have been.

Rosnow (1990) states a sort of "cost-benefit" process dominates ethical decision making in research, and that due consideration is seldom given to the ethical implications of the failure to conduct research that may be ethically ambiguous. This supports Kabat's (1975) contention that in our proper concern for the welfare of subjects, the pendulum has swung so far that it sometimes may seriously prejudice the ability of the study to yield the correct result. Price (1978) feels that this sort of concern may, at least in part, be due to the increase in legal and administrative constraints that severely limit the autonomy of university administration and the freedom of research workers. Among such constraints are included the existence and machination of IRBs.

Kroll (1993) accepts that social responsibility and sensitivity to individual rights must be recognised in scientific inquiry, but contends that the general principle is plagued with difficulties regarding decisions on specific issues. Given the heterogenous composition of IRBs (see earlier), legislated policies or guidelines are difficult to interpret and apply consistently. This is supported by Rosnow et al. (1993), who state that there appears to be great variability in the standards invoked, and in turn the recommendations put forward, among IRBs. Such inconsistencies may be the result of the composition of the committee, differing levels of technical expertise, or may stem from the nature of committee action and interaction. Rosnow et al. (1993) state that "... different standards are being applied to research at different institutions and in different parts of the country. Inconsistent standards create the appearance, if not the possibility, of injustice." (p824). This supports the contention that the IRB process is haphazard. As a result of such criticisms, the Clinton administration in the USA recently established the new National Bioethics Advisory Committee, which is to report in 1997 on steps needed to protect human research subjects (MacIlwain, 1996). This body will also examine the possibility of setting up a single, independent body to oversee the protection of human subjects in all federally funded research (Lehrman, 1997).

The above reflects that a perception of inconsistent judgements on the part of IRBs exists, but the issue goes deeper than that, with a growing point of view among researchers being that IRBs are increasingly acting as a "police force" (Rosnow et al. 1993). This point of view is strongly propounded by Mosher (1988) who states that "The institutionalization of IRBs or HSCs creates a growing bureaucracy that chills science by reducing creative nonconformity." (p379). Whilst acknowledging that when evaluating research, caution should not be abandoned, he also warns that the likelihood of dangers and harms should not be exaggerated. This is particularly the case in social science research, which he feels generally poses little physical or mental risk. In this regard he contends that excessive delay or exaggerated caution (often resulting from a bureaucratic morass) can in fact be discriminatory towards researchers. Concern for human subjects is necessary, but requires only the exercise of reasonable caution; excessive caution not only has deleterious practical effects, but is not justifiable on ethical grounds. Mosher (1988) thus feels that scientific progress is being slowed or prevented by IRBs, not only because of their growing regulatory bureaucracy, but also because they are unreliable and biased in their judgements. According to this point of view, the principle of human subject protection has been misappropriated. As Mosher (1988) states, "Cover your ass is not an ethical principle" (p379), and the principle of respect for persons should in cases such as these be applied to both subjects and scientists. The argument then is that the oppressive outside legislation represented by IRBs will cut down on both the quantity and quality of research. Scientists claim that the spectacular growth of the "ethics business" has resulted in its exploitation, to the point where the application of ethics has become unethical. Bok (1978) states

> "The bureaucracy of regulation of research can weigh as heavily as all other bureaucracies, and impede legitimate activity as much. Paradoxically, it can then allow genuine abuses to slip by unnoticed in the flood of paperwork required and minute rules to be followed" (p118).

The above sentiments are strongly supported by Pettit (1992), who feels that not only is ethical review endangering valuable research on human beings, but it is also endangering the very ethic that is needed to govern such research. He is pessimistic about the direction that the ethical review process is taking, and feels that the reactive dynamic in operation will lead to a serious reduction in the scope of research and to a substantial compromise of the ethic that currently governs research practice. In practice, certain sorts of IRB decisions and procedures are rewarded, and others are punished. There are no rewards for correct decisions, this being the expected norm, and the resultant focus thus falls on penalties. Given the increasingly litigious nature of society, IRBs are bound to become more and more restrictive. Further, the penalties for mistakes are not fairly distributed. In making a mistake by not allowing a proposal to go ahead, the only protest is likely to come from the researchers concerned, and this group is relatively disempowered in the overall institutional structure. On the other hand, allowing a questionable study to proceed lays an IRB open to media attention, public criticism, and possibly even litigation. This situation is likely to lead to IRBs adopting more conservative postures, and to the driving out of more liberal dispositions (Pettit, 1992). Also, in (conscious nor not) attempts to legitimate their presence by showing that they make a difference, any ethics committee is more or less bound to be assertive. This will inevitably result in calls for further regulation of research. The increasing lay presence in IRBs may also mean that perceptions of the value of research *per se* may be devalued. In situations like this, non-scientists may have little sense of the aggregate benefits involved, or it may not be clear to them that blocking the research can have far-reaching negative consequences. An IRB then is likely to move towards a posture of keeping its own hands clean, recoiling from distasteful aspects of research, and ignoring the possible losses associated with negative decisions (Pettit, 1992). Given all of the above, many types of research projects are endangered, including biomedical experiments, studies dealing with any sort of confidential information (no matter how secure the measures are), those that involve some invasion of privacy, those that include deception in the methodology, and those where

subjects are unable (for a variety of reasons) to give personal consent. Pettit (1992) feels that given this intrusion into research by IRBs, there will be increasing resentment and alienation on the part of researchers, who may come to scorn whatever restrictions are laid down. In this way, the restrictions insisted on by IRBs will demoralise researchers, and will lead to a restriction in the commitment of researchers to the ethic which currently prevails.

Pettit (1992) is thus pessimistic about the effect of IRBs on research practice, and he feels strongly that "there is no regulation like self-regulation." (p107). Self-regulation is of course a necessary condition for the effective functioning of research ethics, but unfortunately not a sufficient one. As Bok (1978) states "... professionals have exhibited a pervasive inability to regulate themselves ..." (p118) and this is evidenced in research abuses in Germany prior to WWII, despite the presence of strict guidelines. Self-regulation then does not suffice, and researchers should be held accountable, not only to their colleagues, but to all who are at risk or their representatives (Bok, 1978). So, whilst IRBs may stifle creativity and at times shackle the research process, Liemohn (1979) feels that their existence may also be positive, in that they promote the protection of investigators, and by the development of quality research proposals. This view is supported by Brodie and Stopani (1990), who feel that the disadvantages of IRBs are outweighed by the benefits of careful planning, close adherence to the scientific ethic, and maximum subject protection.

Exemptions from Ethical Review

Which types of research should be subject to review, and are there types of research which could be exempt from the process? Rosnow et al. (1993) note that according to DHEW regulations, protocols of low risk are actually excluded from the necessity of undergoing full IRB review if they do not violate one of three basic criteria: a) anonymity of responses, b) absence of civil or criminal liability, c) sensitive aspects of behaviour. Given these criteria, for example, most

epidemiological studies are technically exempt from the process. In reality however, concerns about liability and the sometimes uncritical acceptance and application of research ethics issues, has meant that the same criteria are being applied to noninvasive interview surveys as to invasive medical procedures. Thus a further challenge to the practice of IRBs is "... to prevent the erosion of confidence among researchers, particularly those engaged in low-risk studies, who may perceive the review process as arbitrary or even irrational." (Rosnow **et al.** 1993).

The difficulty with applying ethical standards may stem from inconsistency, with different standards being applied at different institutions within countries, and further regulatory and practical differences between countries. Such inconsistencies may create the appearance of, if not the possibility, of an unequal distribution of burdens and benefits. Also, conceptual confusion can play a role, as in under some circumstances, research can be reformulated as curricular, or educational, and as such may qualify for expedited review or no review at all. Here USA federal regulations state:

> Research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:
>
> (1) Research conducted in established or commonly accepted educational settings, involving normal educational practice, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
>
> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behaviour, unless: (i) information obtained is recorded in such a manner that human subjects can be identified ...; and (ii) any disclosure of the human

> subject's responses outside the research could reasonably place the subjects at risk of criminal or civil liability. (Federal Register, in Zelaznik, 1993; p65).

The above suggests that, under some limited circumstances, research conducted in HMS and allied disciplines (particularly in institutional settings), might be exempt from review. This can cause some resentment, because in the USA for example, school employees can implement new curricula or learning technologies without being bound by the restrictions that apply to university researchers in similar circumstances. Rosnow **et al**. (1993) give the example of the "good touching - bad touching" curriculum, which its proponents claimed, would increase the reporting of sexual abuse, although others have argued otherwise. The perception may thus be that in certain circumstances researchers are being asked to justify relatively innocent procedures, while others are allowed to pursue potentially damaging practices with little justification and accountability.

Despite the above, Zelaznik (1993) is of the opinion that, particularly in the current ethical climate, investigators have little to gain from IRB exemption. The only benefit would be to reduce the lag between conception of the research and data collection, and this time period is likely to be negligible anyway. On the other hand, not seeking IRB approval can have severe negative consequences. For example, in the case of injury to a research participant (a real possibility in HMS research), an institution may not support the investigator, which presumably it would have been bound to do if IRB approval had been sought and granted. Also, experienced and inexperienced investigators alike can benefit from the procedure by receiving objective evaluation and guidance in ethical, technical, and methodological aspects of their work. Given this, Zelaznik (1993) sees no practical reason that an investigator should not seek IRB approval.

Future Strategies

Rosnow et al. (1993) feel that not only should IRB decisions be more consistent, but also that the power of these committees should be limited. IRBs should take into consideration not only the costs of doing research, but also the potential costs of not doing it. This would go some way to ensuring that there will be no cessation of studies that need to be done to answer important scientific and societal questions. (Rosnow et al. 1993). This supports the view of Stetten (1975), who contends that the fact that a problem may be difficult, or that its solution may prove politically embarrassing or unpopular, is insufficient ground for invoking constraint. Further, he holds that a science that shies away from a line of inquiry merely because the result may be difficult to manage is in a sorry state.

Bok (1978) feels that different strategies are needed in the face of moral problems posed by scientific investigations involving humans. Firstly, we need agreement on what forms of research are risk-free, and then unnecessary bureaucratic impediments must be removed from such research. This is in line with the plea by Rosnow et al. (1993) for consistency in decisionmaking, and is also strongly supported by Pettit (1992) who feels that it is important that ethics committees concern themselves only with research projects that raise genuine difficulties. Secondly, we need agreement on what forms of research involve clear-cut abuse or recklessness, and we need to set clear standards, so that scientists can know beforehand when experimentation is too intrusive, or too dangerous to be undertaken. This of course leaves us with a third set of research proposals - those complex problems where disagreement persists. The challenge of the first two strategies is to "... press the limits of the clearly intolerable and the clearly innocuous so as to make this middle group as small as possible, in order to avoid as much unnecessary dispute as we can." (Bok, 1978; p126).

One of the potential problems identified earlier in the way IRBs operate was the

unequal distribution of reward and punishment for decisions. Pettit (1992) suggests that this might be overcome by some sort of appeal procedure, whereby a researcher can gain review of a negative decision. This would not only strengthen the position of researchers (and, necessarily, research *per se*), but would also combat the trend of IRBs becoming over-restrictive. In terms of rewards for IRBs, Pettit (1992) feels that institutions should publicise, in some form, the records of their deliberations. This may however have an effect opposite to that intended, with committees becoming more cautious and hence restrictive. Another factor that will contribute to restrictive decisions is the threat of media exposure and litigation. Tertiary institutions, who need to attract students to fulfill their teaching and research functions, to say nothing of attracting grants, are particularly sensitive to this sort of negative publicity, and Pettit (1992) feels that as long as IRB members remain vulnerable to media exposure and litigation, they cannot be expected to pursue the task of ethical review in a manner that would benefit science and society.

In conclusion, there are problems with the ways in which IRBs operate. Perhaps the ethos of IRB decisionmaking needs to be reshaped so that, primarily through educative efforts, an ethos of research ethics that is independent of committees, is nurtured. The composition and function of IRBs needs to be examined, and all scientists would support measures that introduce consistency and limit grey areas. The autonomy of research participants should continue to be highly valued, but the cost of not performing valuable research should also be factored into the decision-making process. Within the framework of the above, individual professions/disciplines could have ethical codes or guidelines, which, if carefully formulated and applied, would reduce the number of potential problems. There is of course no regulation like self-regulation, but this is a necessary though not sufficient condition to prevent problems occurring. Likewise, rules alone are not sufficient to prevent abuses to research participants, with the growing bureaucracy of IRBs bearing witness to past problems. The practices of these committees may be restrictive, and should be evaluated and perhaps reshaped,

but as with informed consent, the imperfections of the concept should not lead to the process being discarded.

EDUCATION

Many scientists, holding the belief that knowledge is intrinsically valuable, support the ideal of knowledge for its own sake (Drowatzky, 1993). The first, and probably the most important, decision-maker regarding the ethics of a proposed project, is the originating investigator. Kimmel (1991) states that many researchers are apt to overrate the importance of their work, and underestimate potential harms, as they proceed with a decision of whether or not to proceed with a study. This sort of calculation extends to the personal sphere, where the cost of not completing a higher degree, or of jeopardising funding or reputation, may assume great significance to the individual, perhaps at some ethical cost to the research participants. Also, a growing body of research suggests that individuals systematically differ in the manner in which they formulate ethical appraisals of research, with the result that researchers' solutions regarding the question of potential harm are all too often reduced to statements of personal opinion based on their individual views of morality (Kimmel, 1991). The seemingly haphazard and wide variety of methods involved in ethical decision-making is not the only problem. As Human Movement Studies has become increasingly specialised and techno-positivistically oriented, the so-called "non-scientific" components of courses (such as ethics), appear to have been assigned a secondary role in tertiary curricula (Malloy et al. 1994). Put differently, generally speaking the emphasis in HMS curricula is on functional rather than conceptual aspects of movement, with the non-functional courses either neglected or given subordinate status. Malloy et al. (1994) are in little doubt that HMS research generally operates from a functionalist and logical-positivist worldview, with the result that "students may be leaving our classrooms and laboratories with a singular, paradigmatic view of our field in general and research in particular" (Malloy, 1992). Graduates of HMS programmes will encounter ethical dilemmas in their

professional lives as researchers, teachers, biokineticists, coaches, and may, because of deficiencies in our curriculum structure, be unable to reason through these dilemmas to a satisfactory ethical solution. A functionalist education, by definition does not acknowledge the interpretive realm of ethics, and leaves graduates, particularly those whose professional duties involve contact with humans, inchoate (Malloy, 1992). This would not be problematic if the post-education employment structures provided the necessary guidance, but there are few organisations whose nomothetic mandate includes the moral development of its members (Malloy et al. 1994). Human Movement practitioners ought, not merely in self-protection, but because there is a real need for it, to think more seriously about ethical questions *before* they are confronted with awkward particular cases (Hare, 1993). Ethical awareness, and improving the capability of ethical-decision-making, should perhaps then be approached through a process of education.

Necessity for Training/Education

Malloy (1992) states that one's ability to reason through moral dilemmas is determined by one's cognitive moral ability. Further, in order to develop this ability, " ... it is necessary for the individual to be exposed to ethical concepts and principles" (Malloy, 1992, p29). Such exposure could, according to him, best take place in tertiary curricula. This supports Cooper (in Malloy, 1992), who contends that individuals can achieve advanced moral reasoning capacities via curricula which include classes in applied ethics. Education is thus seen as critical, with the role of the curriculum being to combat ignorance and poor decision-making. "Without an exposure to ethical theories students will remain ethically in the dark" (Malloy, 1992, p28). (Note: for a fuller discussion on the characteristics and utility of applied ethics, see the section on Applied Ethics).

Several authors agree on the need for education regarding ethical issues in science. In response to the problem of scientific misconduct, Wright (1994) feels

that the only thing to do is for the universities to develop explicit research standards and to promote these standards for faculty and graduate students. This echoes the early sentiments of Henry Beecher (see earlier), who was convinced that only a persistent educational effort could bring about real change in the practice of research using human subjects (Faden and Beauchamp, 1986). Friedman (1988) concurs, holding that serious attention should be given to the technical and ethical development of advanced students and faculty, and that this should occur in the form of supervised training programmes that extend beyond formal research training programmes. Further, as a practical measure, he advocates that administrators limit the growth of laboratories to a size in which trainees can be adequately supervised by exercising proper control of space and personnel resources. Goduka (1990) supports calls for education in research ethics, particularly in transcultural settings for which investigators may be otherwise unprepared. Here, discussions of informed consent, for example, must be supplemented by hands-on training. She (1990) states that

> "Universities should prepare prospective researchers for what lies ahead in the field. The training and guidance that graduate students currently receive about informed consent and what it entails is insufficient." (p338).

Further support for this standpoint comes from Annas (1991), who holds that education may ultimately be the most effective way of modifying ethical behaviour. Pettit (1992) concurs, stating that it is important that we nurture a culture of research ethics. This would primarily be achieved by educating students in the ethics of research.

Existing Curriculum Studies

Given this apparent unanimity on the necessity for ethics curricula, particularly in research involving human subjects, one could be forgiven for assuming that such programmes abound. In practice, the reverse seems to be the case. Malloy (1992) and Malloy et al. (1994) conducted extensive surveys of ethics content in

physical activity[3] curricula with two aims. Firstly, they attempted to explore the existence of ethics as a separate course, and secondly, to detect the rationale for the anticipated absence of such courses. Their results indicate that fewer than 25% of Australian, United States, and Canadian HMS departments offer separate courses in ethics. The rationale for the absence of these courses varied, with the primary reason for exclusion being a lack of appropriately qualified teaching staff. Other reasons were that ethics was a component of other courses (primary reason in Canadian programmes), and lack of interest in such a course by either faculty or students. These empirical data seem to support a notion that HMS departments are committed to specialist, functionalist notions of the discipline, to the detriment of "non-essential" courses such as ethics. The data suggest that the exclusion of ethics is largely due to it being a component of other courses, and it seems reasonable to assume that department heads feel that this is sufficient. This is however problematic, for as Malloy et al. (1994) point out, it would seem optimistic to assume that students could achieve a firm grounding in ethical theory and praxis without specific and relevant exposure to the unique and particular ethical problems that may occur in HMS research. As such, an "... ethics 'unit' in a variety of courses is necessary but not sufficient to provide students with the tools of ethical critique" (Malloy et al. 1994, p15). Not only are such courses probably too short, but they are probably too general in nature to be of much benefit in particular situations that may be unique to human movement professionals. Malloy et al. (1994) advance an interesting, if speculative, reason for the absence of ethics curricula in Australian universities. They state that the relative youthfulness of HMS in Australia, coupled with a tendency to consider developments in other countries where programmes are more established, may have led to ethics being absent by collective omission. This situation could of course apply to South Africa as well, where curricula are largely based on existing North American models.

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[3] "Physical activity" is used here as a generic term for faculties such as Physical Education, Movement Education, Human Movement Studies, Kinesiology, Sports Science, Human Kinetics etc.

Teaching Methods

Who should teach ethics courses, and what teaching methods should be employed? Malloy et al. (1994) found that lack of qualified faculty was one reason for ethics courses not being included in curricula. This may be because faculty members with formal ethics backgrounds are not part of the staff complement, or it may be that individuals feel uncomfortable or are not confident of making the transition from technical-functional to philosophical interpretive orientations. In practice, given the current focus of the discipline, HMS departments are more likely to be staffed by persons trained in science than those trained specifically in Philosophy. The question could also be raised as to what level of philosophical training is necessary, bearing in mind the widely differing content and focus of philosophy courses. Malloy et al. (1994) recommend that departments which as yet do not offer courses in ethics in human movement studies, do so. This could be achieved through recruiting qualified staff, or alternatively by providing existing lecturers with the means to develop their academic skills in this area. This supports Pettit's (1992) point of view, which is that students of behavioural and biomedical disciplines should be educated in research ethics by experts in their particular discipline, rather than by outsiders. While philosophers might play a part in this educative process, the specific discipline itself should be involved. In this manner, students will be exposed to the sorts of cases that they are likely to encounter as professionals. Further, they will be made aware of what, by current professional consensus, is considered to be acceptable behaviour. Gifford (1994) concurs, stating that "The ideal relationship might be one in which the scientists are aided by others in constructing the educational materials" (p314). If it is necessary to use outside lecturers, e.g. philosophers, courses should be conducted in conjunction with faculty members, to ensure that the presentation takes discipline-specific situations into consideration.

How should ethics courses be taught? Rosnow et al. (1993), in making

recommendations regarding education of IRB members, feel that a minimum requirement would be the study of an appropriate casebook of actual research protocols that have received extensive review and analysis by social scientists, bioethicists, researchers, and research subjects. Malloy et al. (1994) recommend that ethics be taught through a critical, sensitive pedagogy, and from a variety of perspectives, including philosophy and psychology. They state that this

> "Multi-disciplined approach will enhance the student's ability to understand and apply the notion of 'right', 'good', and 'authentic' conduct to a wider array of contexts, as well as understanding the cultural totality in which human movement activities exist." (p16).

Further, they state that courses should incorporate the practical through the use of case studies, debates, and current issues from newspapers, magazines, or personal histories. Supporting this practical, contextual approach, Gifford (1994) makes the recommendation that issues of scientific misconduct be made a central part of scientific training, as he suggests "perhaps integrated with discussion of scientific method" (1994, p312). He presents an instructional programme in ethical issues, with the overall plan consisting of a series of modules, each focusing on a particular topic. Students are supplied with relevant reading material (case study, policy statements, and a set of discussion questions), and then meet with the course presenter to discuss the issues. He feels that it is important that students not only discuss seminal cases in research ethics, but that they are also sensitised to more common, less dramatic issues that they will encounter in their everyday lives. Beauchamp (1984) strongly advocates the case-study method, contending that it is a sound pedagogical technique with a distinguished history. Studying specific cases will assist them in real-life, rather than hypothetical circumstances. Further, case studies are most effective when they are used to draw out broader ethical principles and moral rules, focusing attention on the common elements in a variety of cases, and to the implicit problems of ethical theory to which they may point (Beauchamp, 1984). Case studies can employ the Socratic method of eliciting reflection, insight, and both

theoretical and practical judgement. The Socratic method proceeds from professed ignorance to questions that eventuate in proposed principles or universal definitions. These are tested by hypotheses and modified into ethical theory.

Rosnow (1990) advocates role-play as a method of teaching professional ethics. Prior to any role-play exercise, his classes are provided with relevant reading material, including case studies and ethical codes, in this case the APA's ethical recommendations. Following this, students are required to peruse current journals with the purpose of finding any article that may have violated one or more of the principles of the ethical construct presented, and to write a brief report on this. Oral reports and detailed discussion in class follow, and students then role-play the author of the study to defend criticisms. This serves the important purpose of offering an alternative perspective, and sensitising students to the view that there is more than one vantage point from which the ethical evaluation of a study can be made. Finally, the studies are evaluated on their ethical cost and theoretical or practical utility through a scoring procedure devised and described by Rosnow (1990). Scoring matrices are developed to illustrate the way that most IRBs seemingly operate. A similar method is used by this author, where graduate students are required to briefly describe their compulsory graduate research projects, to identify any potential ethical problems, and to discuss ways of eliminating or dealing with these problems. This assignment takes place after students have completed a series of lectures and case-studies in research ethics.

Conclusion

Gifford (1994) states that the crucial element in addressing problems of scientific misconduct involves the education of scientists, rather than mechanisms of sanction after the fact. Malloy (1992) states that the role of ethics curricula is to combat ignorance, and that without exposure to ethical theories students will

remain ethically in the dark. Gifford (1994) concurs, stating that the most important goal is to raise consciousness of the issues involved, encouraging young researchers to take certain questions seriously, and generate discussion about them. Further, education will effectively communicate information about acceptable professional standards. Given that most human movement studies programmes have become specialised in professional preparation, perhaps to the detriment of ethical conduct, ethics courses may provide the means to enable aspirant professionals in the field with the means to discover their own ethical consciousness (Malloy et al. 1994). Finally,

> "we ought not to accept moral complacency in our organisations. One step towards idiographic and nomothetic 'right' conduct is to provide for these developmental opportunities in our curriculum." (Malloy, 1992; p 30).

CHAPTER III

METHODS AND PROCEDURES

INTRODUCTION

The methodology employed by this study consisted primarily of the standard techniques of philosophical analysis. That is, the broad methodological framework involved criticism and clarification of ethical concepts, ethical codes and ethical practices in HMS, its sub-disciplines and allied disciplines. As such, the critical analysis and review of literature should be construed as constituting an important part of the methods, in that it employed the accepted Analytic Philosophy techniques of criticism, clarification, evaluation, reason, and synthesis. The contributory empirical data collection consisted of the following:

a) Distribution of specifically constructed, ethically questionable research proposals to HMS practitioners for review (Professional analysis). (Note: this involved deception of research participants - see later for justification).

b) Questionnaire to HMS Heads of Departments, designed to elicit information regarding departmental/institutional ethical practices.

c) A journal search of HMS and related disciplines, in order to assess the necessity for, and reporting of, informed consent in refereed journal articles.

PROCEDURES AND MEASUREMENT TOOLS: EMPIRICAL DATA

Research Proposals

In order to assess whether or not a sample of HMS researchers are cognisant of, sensitised to, and in fact practice commonly accepted research ethics guidelines, five ethically questionable research proposals were constructed for distribution. The full papers are presented in Appendices 1-5, the titles and sub-disciplines (in

brackets) being as follows:

1. Intravenous fluid administration following a marathon (Sports Science, Exercise Science, Exercise Physiology, Sports Medicine).
2. Performance and attitudinal responses to military basic training (Measurement and Evaluation, Exercise Science, Movement Psychology).
3. Myoelectrical and kinematic responses to repetitive plyometric exercises (Biomechanics).
4. The effect of alcohol ingestion on perceptual motor skills related to driving (Perceptual and Motor Learning).
5. The effect of frequency on psychophysical responses to lifting (Ergonomics, Movement Psychology).

The five papers thus broadly encompassed nine allied/sub-disciplines of HMS. This was done to eliminate a bias in response that may have occurred if respondents were practitioners of only one sub-discipline. Further, with the focus of this study being research ethics, only those sub-disciplines conducive to, and active in research were included. So, whilst research undoubtedly takes place in fields such as Sports History or Sports Sociology, it is comparatively limited, and due to the nature of the research, ethical malpractices less likely.

Four of the five papers were based on articles that have appeared in refereed journals, and the fifth on a postgraduate research project. These papers were altered in certain respects so as to make them ethically questionable. That is, as presented in their altered state, they were deemed to be ethically unacceptable to an Institutional Review Board dealing with research in HMS. Put differently, the five papers were modelled on actual, recent supervised and refereed research in HMS. They were altered to be ethically problematic in a variety of ways. (These alterations are discussed in more detail in Chapter four).

Table I below presents a simplified overview of the principles of research ethics

potentially violated by the research proposals. Numbering of the proposals is consistent with that displayed above.

Table I: Potential violations of commonly accepted research ethics principles and practices as exemplified by research proposals 1-5.

	Research Proposals				
Principles/Practices	1	2	3	4	5
Informed Consent	X	X	X	X	X
Coercion/captive population	X	X	X	X	X
Harm	X		X	X	X
Cultural considerations				X	
Release form				X	
Paternalism		X	X	X	X
Medical screening		X	X		X
Confidentiality		X		X	
Privacy	X				
Debriefing				X	
Deception	X			X	

The research proposal method of data collection can be classified as descriptive research, in that it employs the survey method to study the practices or opinions of a specified population, in this case researchers in HMS (Thomas and Nelson, 1996). For the research proposals and the questionnaires to department heads, the following conceptual procedures were followed:

i) Determining the objectives
ii) Delimiting the sample of respondents
iii) Constructing the questionnaire
iv) Conducting a pilot study

v) Writing the cover letter

vi) Analysing the results.

In this case, the questionnaire and related literature were designed to contribute to an evaluation of research ethics awareness in HMS researchers by requiring them, through a review process, to identify ethically questionable practices in research proposals.

Potential questionnaire respondents were selected from the following databases: entries in 1) Who's Who in Physical Education, Health Education, Recreation and Dance Training Institutions in Africa (Amusa et al. 1994); 2) list of delegates to the 3rd International Olympic Committee World Congress on Sports Sciences, Atlanta 1995; 3) list of delegates to the International Council for Physical Activity and Fitness Research Congress, Itala, South Africa 1995; 4) membership list of the South African Sports Medicine Association, 1995; 5) membership list of the South African Federation for Movement and Leisure Sciences, 1995; 6) membership list of the Ergonomics Society of South Africa, 1995. The potential respondents represented tertiary institutions and research facilities in the 41 countries indicated below:

Table II: Geographic location of potential respondents to the research proposals.

A	Albania, Australia, Austria
B	Belgium, Botswana, Brazil, Bulgaria
C	Cameroun, Canada, China, Czech Republic
E	Egypt, Estonia
F	Finland
G	Germany, Great Britain
H	Hungary
I	Israel, Italy

J	Jamaica, Japan
K	Kenya, Korea
L	Lesotho
M	Macedonia, Malaysia, Mozambique
N	Netherlands, New Zealand, Nigeria, Norway
P	Poland, Portugal
R	Romania
S	Saudi Arabia, South Africa, Sweden, Switzerland
T	Turkey
U	Ukraine, United States of America

With the focus of this study being *research ethics*, it was considered necessary to eliminate human movement practitioners in secondary schools and government departments from the selection process. Therefore, through a process of address scanning, only practitioners attached to tertiary institutions or research centres were targeted. From this database of potential respondents a random sample selection was performed via software, using Microsoft Excel V5.0 - Random Number Generation Tool. The number targeted and randomly selected from the original lists appears in Table III.

The five research proposals, accompanying article review sheets, a biographical questionnaire, and a covering letter were mailed to each of the 193 potential research participants.

Unfortunately, the logistics of the mailing systems of 41 countries precluded the possibility of enclosing self-addressed, stamped envelopes. It was anticipated that this, coupled with the onerous task of reviewing possibly five research proposals would limit the responses, and as such constitute a limitation of the study.

Table III : Initial source for, and numbers of, potential respondents for the research proposals.

Source	Targeted	Selection
1. Who's who in Africa	116	40
2. 3rd IOC Congress	107	50
3. ICPAFR Congress	32	32
4. SASMA	36	20*
5. SA Federation	38	38*
6. ESSA	13	13*
n	**342**	**193**

* relatively low numbers due to overlap of membership.

Each research proposal was accompanied by a Review Sheet (see Appendix 6). This sheet was adapted from the Review Sheet sent to manuscript reviewers for the Proceedings of the International Council for Physical Activity and Fitness Research, 1995. The sheet serves as an example of a common review tool in HMS and allied research, assessing five areas, namely:

a) Introduction and review of literature
b) Aims of the research
c) Methods, procedures and research design
d) General
e) Acceptance/revision/rejection.

To facilitate ease of the review process, only Section D required an open-ended response, providing respondents with an opportunity to comment on any omissions or potential problems associated with the proposed research. Ethical issues in research were not explicitly mentioned in the Review Sheet. That is, it was left to the reviewer to identify research ethics problems and to comment on

these in Section D if deemed necessary.

Respondents were also requested to complete a biographical questionnaire (Appendix 7) which was designed to elicit basic information on the professional standing/expertise of the respondent, as well as determining sub-discipline specialisation/s.

A covering letter (Appendix 8) requested participation, explained the aims of the research, assured confidentiality, and promised a report on the completed research. In terms of the title and aims of the research, the covering letter was deceptive in that an incorrect title was used, and potential participants were deliberately misled as to the ultimate objectives. Deceptive research is of course ethically problematic, and the use of deception as a research tool must of necessity be carefully justified.

Justification for Deception in the Research.

It has been stated that "Deliberate nondisclosure of the material fact is no different from deliberate misrepresentation of such a fact ... "' (Faden and Beauchamp, 1986, p162). This seems to advance the view that informed consent is necessary to protect subjects' rights of self-determination, even if the level of risk is low and the potential benefit high.

Informed consent and deception are mutually exclusive concepts. Given the universality of acceptance of the desirability of informed consent, it was deemed necessary to justify the deception practised in this study.

Essentially the justification rests on two bases. The first is that of methodological necessity, and the second nonmaleficence. Both are consistent with principles 4.31-1 and 4.31-2 of the American Psychological Association's (APA) 'Principles of professional ethics'. Also, the APA's 1981 Ethical principles of psychologists

states that the ethical costs of deception must be balanced against the knowledge to be gained, and notes that methodological requirements of a study may make the use of deception necessary.

> "Methodological requirements of a study may make the use of concealment or deception necessary. Before conducting such a study, the investigator has a special responsibility to (i) determine whether the use of such techniques is justified by the study's prospective scientific, educational, or applied value; (ii) determine whether alternative procedures are available that do not use concealment or deception; and (iii) ensure that the participants are provided with sufficient explanation as soon as possible." (Kahn, 1984, p22)

Vinacke (in Faden and Beauchamp, 1986) states that

> "The issue seems to boil down to the question of whether it is more important to avoid deceiving someone, or, in the interests of science, to sacrifice a few people in the ultimate expectation of helping many via the knowledge gained." (p171).

In this study, there was no question of "sacrificing a few people". Besides the fact that anonymity was preserved, the study investigated **possibilities** of abuse of subjects in **hypothetical** research projects, and focused on institutions and institutional practices, rather than on individuals. Furthermore, on conclusion of the work, respondents were informed of the deception and the justification therefor and received results of the survey. (This is consistent with the APA's 1972 ethical code - Faden and Beauchamp, 1986). Also, seeking consent was impossible without probably seriously compromising the research. It is contended that the deception practised is not incompatible with the values of the larger community in which the research is conducted (Faden and Beauchamp, 1986).

It could be argued that the moral wrong entailed by deception cannot be justified by utilitarian appeals to beneficial consequences for society or for science, no matter how great such benefits may be. This however seems to overemphasise the moral wrongness of deception. Of course this is not to say that it is not morally wrong, but rather that if it is effectively inconceivable that deception will cause harm, and that if the knowledge gained is intended to, and may benefit society and science, then such deception can be justified. In short, the 'black and white' statement above has been blurred by introducing utility where no harm seems conceivable.

Essentially then the author contends that the justification does not involve conflict between contrasting frames of reference for research ethics. The autonomy frame features informed consent (and therefore opposes deception), while the beneficence frame emphasizes harm and welfare. In this case, deception was justified on the grounds that to disclose the nature of the research would irreparably compromise it, and that the question of harm does not arise.

Journal Search

In order to contribute to the evaluation of ethical practices, a comprehensive journal search was employed to ascertain whether or not authors in HMS and cognate disciplines reported on the informed consent process. That is, when utilising human research participants, do HMS researchers explicitly acknowledge that informed consent was obtained, where such a process is necessary? Twenty-three leading HMS and related journals and three sets of conference proceedings were targeted for analysis. Journals were targeted both through status and availability. Five university libraries were visited in the process of data collection. In all cases, the most recent issues of research journals, preferably over a minimum 1 year period, were extracted for analysis. Table IV provides information on the journals selected; volumes, numbers and dates selected; total numbers of papers read, and percentage of papers for which the reporting of informed consent was deemed appropriate.

Table IV : Selection of HMS journals for analysis: the reporting of the informed consent process.

Journal	No of papers	Consent Appropriate (%)
International Journal of Physical Education; from 26(1)1989-28(4)1991	45	31
Journal of Sport and Exercise Psychology; from 17(1)1995-17(4)1995	28	79
Sport Psychologist; from 9(1)1995-9(3)1995	22	64
Journal of Applied Ergonomics; from 26(1)1995-26(6)1995	48	56
Journal of Applied Biomechanics; from 11(1)1995-12(1)1996	39	56
Medicine and Science in Sports and Exercise+; from 28(1)1996-28(5)1996	95	63
Research Quarterly for Exercise and Sport+; from 66(1)1995-66(4)1995	38	71
Human Movement Science+; from 14(3)1995-15(2)1996	33	58
Journal of Sports Medicine and Physical Fitness#; from 35(1)1995-35(4)1995	45	89
South African Medical Journal; from 84(1)1994-84(10)1994	102	49
South African Journal for Research in Sport, Physical Education and Recreation; from 5(1) 1982 -17(1)1994	207	55
Ergonomics South Africa; from 1(2)1989-5(1)1995	30	67
South African Journal of Sports Medicine; from 5(1)1990-3(1)1996	79	16
Proceedings,20th Biennial National/ International Australian Council for Health, Physical Education and Recreation Conference, January, 1996.	74	19
Proceedings, 1st African Regional Conference on Physical Education, Recreation and Dance, 1994.	41	44
African Journal for Physical , Health Education, Recreation and Dance; from 1(1)1995-2(1)1996	28	50
Proceedings of Symposium, 13th International Congress of Anthropological and Ethnological Sciences, ed Parizkova, 1993.	14	86
Journal of Applied Physiology; from 80(6) 1996-81(1)1996	115	35

Canadian Journal of Applied Physiology; from 19(1)-(4)1994	31	65
South African Journal of Food Science and Nutrition; from 5(1) 1993	43	44
International Journal of Sport Nutrition; from 4(1)-(4) 1994	31	58
Australia Journal of Science and Medicine in Sport; from 22(4)1990-26(2)1994	67	66
Adapted Physical Activity Quarterly; from 13(1)-(3) 1996	20	60
Journal of Human Movement Studies; from 30(1)-(6) 1996	16	94
Journal of Teaching in Physical Education#; from 15(1)-(4) 1994	26	69
Journal of Motor Behaviour; from 27(3)-28(2) 1995-1996	30	87

+Consent statement is a publication requirement

Journal adherence to ethical procedures

Some of these journals are specifically multi-disciplinary, some focus narrowly on one subdiscipline, while others are less defined in terms of editorial content. It was deemed desirable to analyse as many research-orientated cognate disciplines as possible, hence the broad selection of journals. The journals included in the meta-analysis encompassed the following allied/sub-disciplines: Sport Psychology, Ergonomics, Biomechanics, Sports Science, Exercise Science, Exercise Physiology, Sports Medicine, Recreation, Sports Nutrition, Adapted Physical Activity, and Education. For purposes of analysis, they were categorised as being associated with one of the following broad subdisciplinary domains - Physiological, Biophysical, Psycho-social, Professional, and Multidisciplinary.

The primary aim of the analysis was to identify research papers where the reporting of informed consent was deemed necessary, and to determine whether such consent had been reported or obtained. A secondary aim was to gain insight into current research practices in HMS - specifically to gather information about potentially ethically problematic methodology, such information serving to intuitively inform the broader conceptual debate. A total of 1347 papers from the

23 journals and 3 Conference proceedings constituted the database for analysis. The first step was identifying whether or not the informed consent process was necessary or appropriate in each case. Generally speaking the appropriateness of obtaining informed consent was determined according to the guidelines presented as a Policy Statement in the journal Medicine and Science in Sports and Exercise (1996). That is,

> " ... any experimental subject or clinical patient who is exposed to possible physical, psychological, or social injury must give informed consent prior to participating in a proposed project. Informed consent can be defined as the knowing consent of an individual or his legally authorized representative so situated as to be able to exercise free power of choice without undue inducement or any element of force, fraud, deceit, duress, or other form of constraint or coercion" (Policy Statement, Medicine and Science in Sports and Exercise, 1996; xiii).

It was deemed not necessary to obtain consent for papers concerned with case histories, analyses of injuries, technical or biochemical information, surveys, review articles, and studies on nonhumans. It was considered necessary for research utilising captive populations such as students, school children, and tournament participants, where subtle forms of coercion may operate even if that is not the intention. Also, in research concerning minors, it was deemed necessary that written parental informed consent be obtained. Where doubt existed as to whether or not consent was appropriate, commonly accepted research principles were applied to arrive at a determination for inclusion in the analysis. Generally speaking, conservative selection procedures were applied in that if it seemed that there were some grounds for obtaining informed consent, such consent was deemed necessary. As a result of the above process, 703 research papers were identified for further analysis.

Following the above initial determination, each paper was carefully read to ascertain whether or not informed consent had been obtained and/or reported. It was necessary to read each paper fully, as although the informed consent is normally reported in the procedures or methods section, this is not always the case. Further, a full reading contributed to an overall understanding of research practices in HMS, such understanding serving to assist the broad conceptual analysis. In some cases the process was mentioned at the beginning of the paper, in a footnote, or in an acknowledgement or note at the end. Reporting of the process could of course assume many forms. Some journals require a standard format, while others have no explicit or implicit requirements. Informed consent was accepted to be reported when authors utilised explicit statements such as "Subjects provided written informed consent", "Consent was obtained", or "The study was approved by the ------ Institutional Review Board". The number of cases of reporting of the process was determined for each journal and expressed as a percentage of the number of papers for which consent was deemed appropriate. Where possible, publication requirements of journals regarding the reporting of the consent procedure were ascertained and reported.

Questionnaires to Heads of Department

This section of empirical data collection involved a questionnaire to a limited selection of heads of academic HMS Departments (See Appendix 9). The questionnaire was designed to elicit specific information regarding the existence and function of ethical review practices, guidelines and courses in each specific department. In order to facilitate a degree of comparative analysis, questions 13-22 were based on results obtained by Malloy **et al**. (1994) in their investigation concerning the existence of ethics courses in HMS curricula. The questionnaire consisted of 30 questions, 25 of which were categorical Yes-No (closed questions). Closed questions were chosen to facilitate ease of response. The first 4 questions sought biographical information while the final open-ended question provided an opportunity for the respondents to make additional

comments. The questionnaire was constructed according to guidelines presented by Thomas and Nelson (1996), and was accompanied by a covering letter which introduced the project, provided necessary information, and guaranteed confidentiality of results (see Appendix 10). Unlike the research proposals, deception was not a necessary part of the methodology, and the correct title and nature of the project were provided. As there were of necessity people who were target respondents for both research proposals and questionnaires to department heads, the latter were sent out three months later to avoid alerting participants to the deception practised in the former. Responses to research proposals received after the mailing date of questionnaires to department heads were not considered as valid for analysis if the respondent was a dual participant.

Sample selection for the questionnaire was as follows:

I) All Heads of departments of South African universities offering HMS courses (n=13)

ii) Random selection of North American and Australian universities offering HMS courses, obtained from The World of Learning (1995), (n=53). Random sample selection was performed as for the research proposals.

PILOT TESTING

Pilot tests were conducted to evaluate the scientific credibility of the research proposals, and to assess questionnaire format, content, comprehension, expression and importance of items, and whether questions should be added or deleted.

Following construction of the research proposals, they were submitted to Heads of HMS Departments at three universities in order to assess their scientific credibility. The rationale behind this was that the ethical alterations to the studies should not affect their methodological validity to a point where the review process

would be compromised. The three people consulted each reviewed all the papers, and their combined areas of expertise covered all those represented in the research proposals. As a result of this process, minor revisions were made to the proposals.

Seven HMS lecturers at two universities participated in pilot-testing of the two questionnaires, in the same order that they would be presented to research participants. Participants were requested to critique the questionnaires from both grammatical and comprehension perspectives, and any additional comments or questions were welcomed.

The research proposal questionnaire had been adapted from the International Council for Physical Activity and Fitness Research 1995 Congress Proceedings review process, and pilot testing indicated that no modification was necessary. Initial testing for the questionnaire to Heads of Department indicated that the format needed attention, and that some additional questions should be added. A further round of pilot testing indicated that no further alterations were necessary.

It was considered necessary to establish the reliability of procedures involved in the journal search analysis. One HMS lecturer and two graduate students independently scanned 20% of the papers reviewed by the investigation, and achieved exactly the same results as the author of this study.

ANALYSIS AND STATISTICAL TREATMENT

The primary method of analysis essentially comprised the standard techniques of philosophical analysis. For the research proposals and questionnaires to heads of department, given the nature of responses to the measurement tool, results were simply presented as absolute numbers and percentages of respondents, and inferences were drawn from this. Open-ended questions were

analysed and placed into relevant categories where possible. Sub-discipline trends were examined by categorising responses into primary areas of expertise. For the journal search analysis, results were also presented in simple descriptive form as absolute numbers and percentages.

Given the nature of the measurement tools (questionnaires) and the responses (numerical counts from categories), selected data were subjected to Contingency Table and Chi-square analysis to statistically test the significance of the discrepancy between the observed and expected results. All results were calculated both manually and by using a statistical software package, namely STATGRAPHICS V6.0, with the two sets of results corresponding (Appendix 11). Considering the limitations relating to the empirical data, and in order to optimise the balance between committing Type I and Type II errors, the 0.05 level of probability was employed as the minimum level of significance, with more significant levels being reported where relevant (Franks and Huck, 1986).

Following consultation (Charteris ,1996; Piper, 1997), it was decided that the primary results statements would concern the reporting of raw data and percentages. After computing Chi-square statistical treatment, statements of significance would assume secondary importance, given the inherent limitations of the treatment and the nature of the data.

Using nonparametric tests, and specifically Chi-square, involves being aware of some limitations and restrictions, hence the assignment of secondary treatment to the statistical results. Whilst there is not unanimous agreement on the issue, it is generally assumed that nonparametric statistics lack power relative to parametric methods. That is, the ability to reject a null hypothesis that is false, is weaker (Thomas and Nelson, 1996). Also, Chi-square is usually not applicable for small samples, and the stability of a cell may be decreased if there are less than 5 expected frequencies in any one category or cell (Cohen and Holliday, 1979; Ferguson, 1981). Some statisticians however maintain that a maximum of

20% of the cells could have expected frequencies of less than 5, while others would put the percentage as high as 40.

Further, in order to utilise Chi-square to test statistical significance, the null-hypotheses had to be formulated to take the underlying principles of the calculation into account, thus weakening the null hypothesis. For example, an ideal research hypothesis (given the reasonable expectation of adequate training) may have been: "There will be an unequal number of rejections and acceptances of ethically problematic research proposals in that all researchers will reject them." However, there was no prior literature or empirical work on which to base such a hypothesis. Therefore, the application of Chi-square to these particular data is limited. It could perhaps be reasonably expected that most reviewers should seek revision or rejection, but introducing a low expected value (for acceptance) to Chi-square dramatically increases the chance of a significant difference, due to the computational structure of the formula. However desirable such a practice might be in terms of the conclusions of the study, the author contends that it would constitute "bad science" on two grounds. Firstly, as mentioned, there was no *a priori* knowledge on which to base the low expectations. Secondly, and importantly, it would knowingly and deliberately predispose towards rejection of the null hypothesis, thereby introducing an unacceptable bias to an area where the utility of the statistic is open to question anyway.

An alternative model to base the Chi-square statistic on, specifically for the data pertaining to the research proposals, was a process which assumes equal and random allocation to the three review categories. What a significant Chi-square suggests here is that, for example, more proposals are being accepted, and fewer returned for revision, or rejected, than would be the case if people were behaving in a random fashion. Put differently, there would be significant differences between categories with regard to random expected and observed responses. For the remaining two categories of data, Chi-square served to identify the significance of differences as per hypotheses 2 and 3.

In addition to the above technical limitations generally associated with Chi-square, the low numbers and skewed distribution of responses limited the utility of applying statistical procedures to the contributory empirical data. Further, the inclusion of the Yates correction factor when computing contingency tables serves to increase the stringency of the test, reducing the chance of rejecting the null hypothesis. This strengthened the case for presenting the raw- and percentage-data as primary, and relegating Chi-square analysis to secondary importance, a consideration borne in mind when designing the study.

CHAPTER IV

FINDINGS, ANALYSES, AND IMPLICATIONS

The problems posed by this study were examined within a holistic framework (Charteris, 1986), and were addressed in discrete ways. As such, the project was multi-faceted, utilising disparate methods. Specifically, it is contended that the arguments central to the thesis are not derivable empirically alone. Personal communication, papers delivered at local and international conferences and the ensuing debate, comment engendered by relevant publications, and pilot work; all coalesced to convince the author that a purely (definitive) empirical study could not be constructed to satisfactorily examine the issues addressed by this thesis. Also, the limited utility of the statistical treatments applied to data of this nature (see Chapters I and III) increase the importance of arguments made around the data, rather than of the data themselves. The empirical work that was done was not done to solve the problem, but to inform the conceptual analysis begun in Chapter II. The findings presented below thus have their strength not in the empirical data, but in the case made around them.

RESPONSES TO RESEARCH PROPOSALS

Figures 1 and 2 show that 53.9% of respondents occupied a professional position of Senior Lecturer or higher (82.1% held the status of lecturer or higher), and that 66.7% had achieved Doctoral degrees, with a total of 84.6% having been awarded Masters degrees. Further, the 78 respondents had, in the five years preceding data collection, supervised 632 postgraduate theses ($\bar{x}$ 8.1) and published 801 refereed journal articles ($\bar{x}$ 10.3) (Table V). This indicates that respondents were, generally speaking, senior and experienced researchers and teachers, as opposed to recent graduates or professionals relatively new to HMS research. It is noteworthy that the sample comprising Senior Lecturer and higher ranks (53.9%), was responsible for 87.65% and 83.89% of the theses supervised and

Table V: Number of postgraduate theses supervised and refereed journal articles published (1990-1995) by Research Proposal respondents.

	n	$\bar{x}$
Theses (n 78)	632	8.1
Journals (n 78)	801	10.27

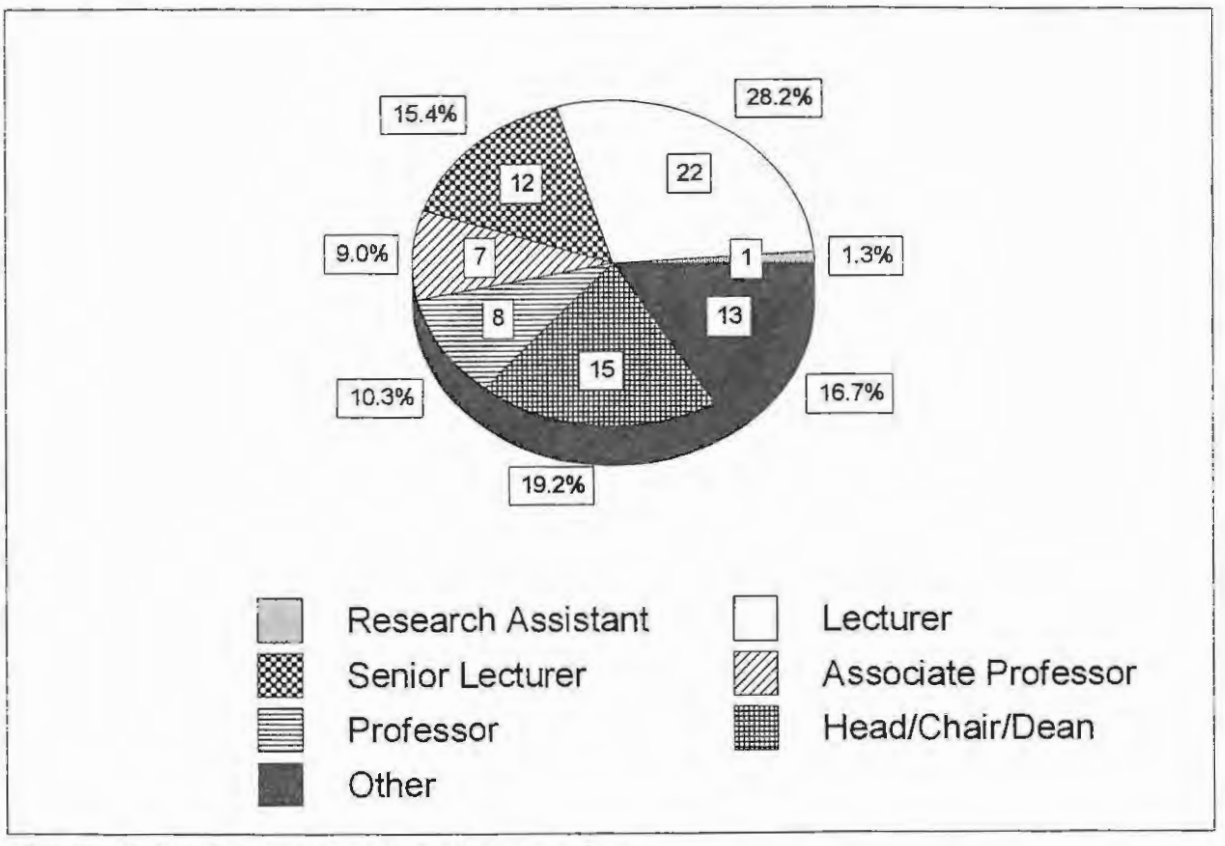

Figure 1: Professional status of respondents.

Table VI: Sub-disciplinary domains of the respondents to the research proposals.

Sub-disciplinary Areas	Respondents - number	Respondents - percent
Physiological Domain (Exercise Physiology, Nutrition)	55	24.4
Biophysical Domain (Biomechanics, Kinanthropometry, Ergonomics)	31	13.8
Psycho-social Domain (Sports Pyschology, Perceptual and Motor Learning, Sociology of Sport)	29	12.9
Professional Domain (Clinical Kinesiology, Physical Therapy, Sports Medicine, Health related Areas)	54	24.0
Conceptual and General areas (Philosophical, Historical, Leisure, Management)	56	24.9
Total	225	100

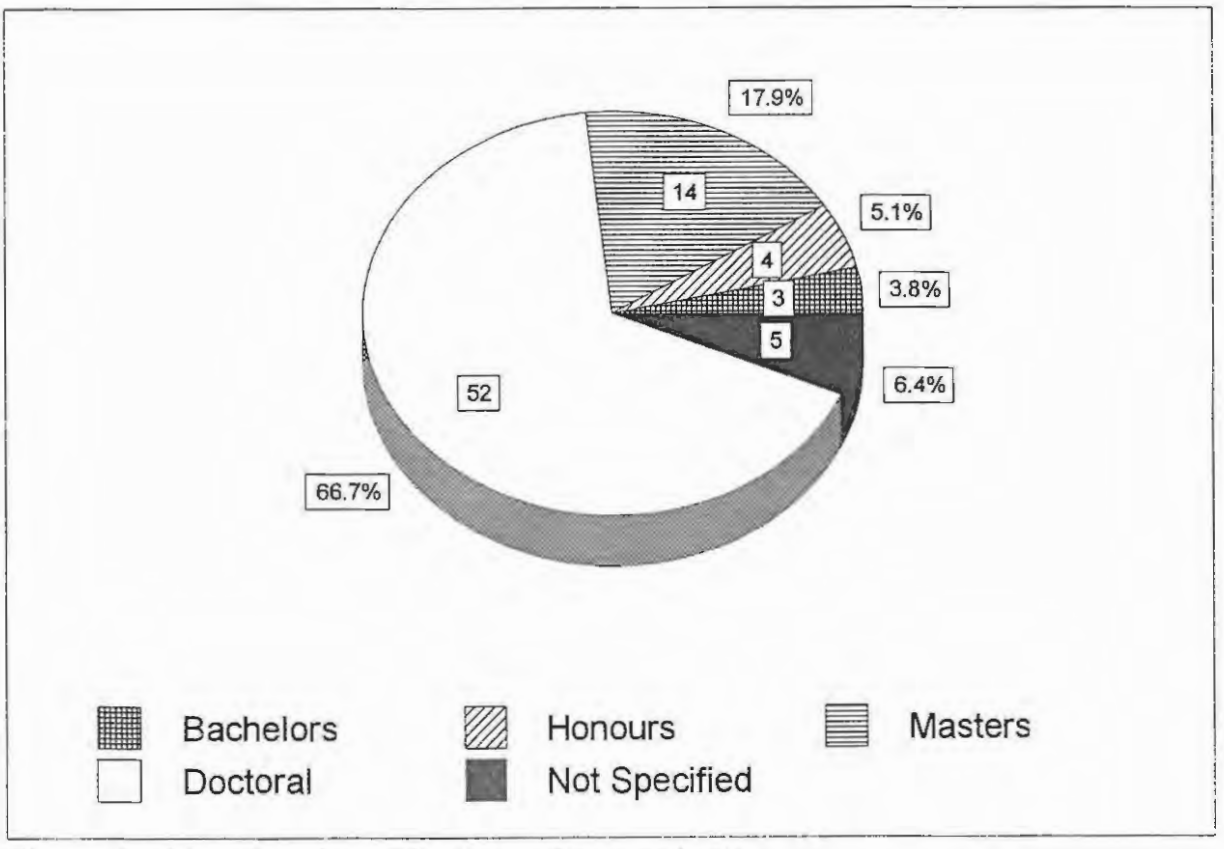

Figure 2: Educational qualifications of respondents.

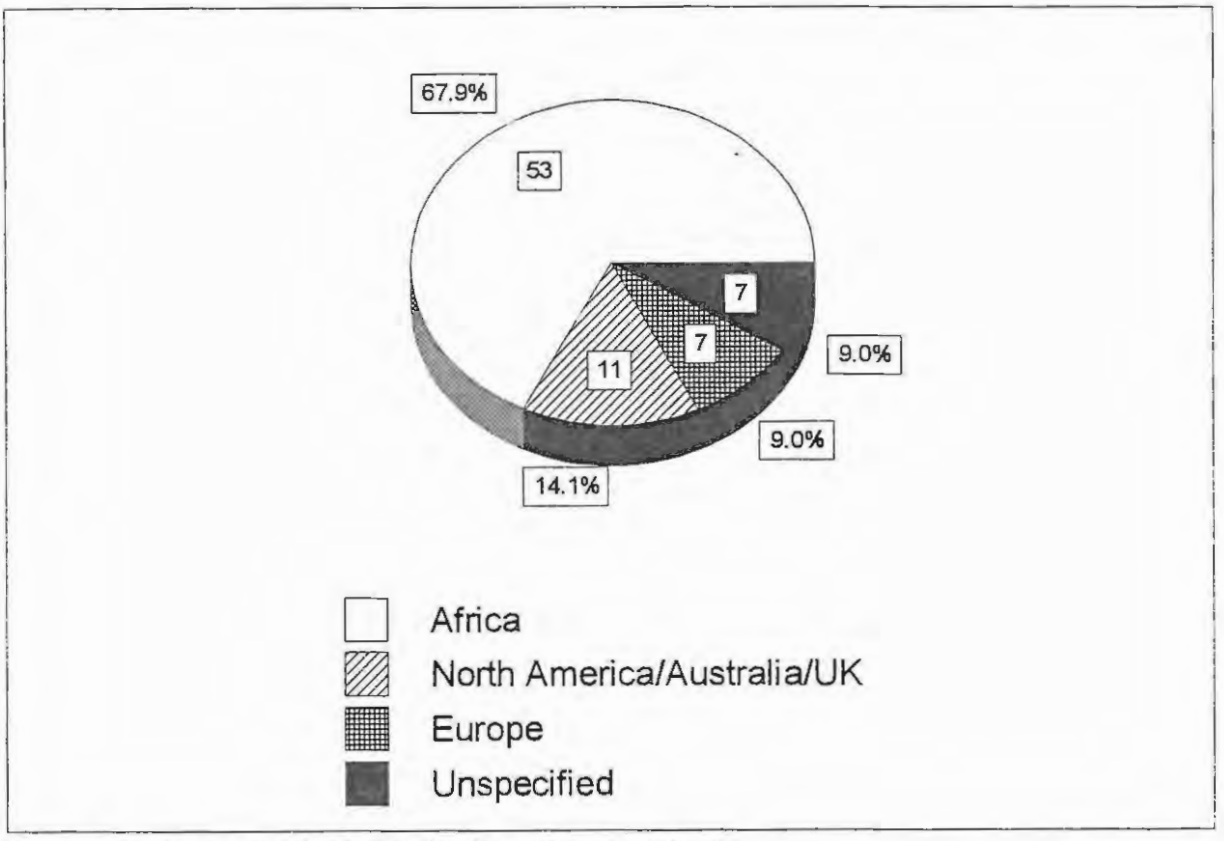

Figure 3: Geographical distribution of respondents.

refereed papers published, respectively. That is, among the response sample, the majority of research and supervision responsibility is held by senior staff members, a fact which has implications for education and training in research ethics. The response weighted in favour of senior staff members was largely due to design, with the research attempting to evaluate current, established practices in HMS, and with the potential respondent database including conference delegates, and membership lists of professional organisations (See Chapter III). As could be expected, this database leant towards the inclusion of established professionals rather than recent graduates or those new to the field. Figure 3 shows the geographical distribution of respondents. Given the specific focus of this project, the majority of responses were from Africa, but responses were also received from 10 countries outside Africa. This spread of responses is important in assessment and possible generalisation regarding ethical practices of the profession as a whole, i.e. in addition to evaluating those practices locally. Table VI shows a wide variety of sub-discipline specialisation among respondents, which is not only indicative of the holistic and interdisciplinary nature of HMS, but also serves to eliminate bias towards any one sub-discipline, once again ensuring a reasonable assessment of the profession as a whole.

Research Proposals

It is necessary, for discussion purposes, to more closely examine the ethically questionable proposals themselves (Appendices 1 - 5). That is, what is it that makes each proposal potentially unacceptable (in the form presented) as a research project in HMS? In order to do so, ten ethical issues/considerations are briefly presented below and examined in the light of the 5 proposals.

Informed Consent, Medical Screening and Release Forms

Consent to participate in research can only be considered to be informed when the participant has received a thorough disclosure about the project, when the

disclosure has been comprehended, and when the participant has voluntarily consented to the intervention (Beauchamp, 1989). Furthermore, in the USA, it is a legal requirement that research participants who are exposed to possible harm (physical, psychological or social) must give informed consent prior to participation in a project (Policy Statement, 1996). Also, it has become commonly accepted practice to record a participant's informed consent in written form, particularly in cases where the element of risk is greater than usual, or where there may be problems with comprehension of the research by subjects.

Not one of the 5 research proposals submitted to respondents made any mention of consideration or application of the informed consent process, in so doing potentially violating not only legal requirements (where applicable), but also (and probably more importantly) a generally accepted ethical principle central to the practice of modern research on humans. The continuum of worst-case to best-case scenario is thus as follows: worst-case assumes that there was to be no disclosure of information regarding the project (and consequently possibly no comprehension on the part of participants), bearing in mind that 4 of the 5 projects involved the possibility of harm, and that there was a possible comprehension problem with one. The best-case scenario holds that the non-presentation of the process was simply an error of omission. Even this however will not do. Despite controversy over the process of informed consent, it is a commonly accepted and necessary facet of research. Furthermore, as detailed in Chapter II, it is a complex phenomenon with stringent requirements that ought not simply be ignored (see Chapter II for details on the elements that should be included in an informed consent document). In the case of all 5 proposals, the inclusion of written consent would have served to protect not only the research participants, but the investigators as well. In the latter case, inclusion of the process serves as proof of consideration of ethical issues, and may in fact provide some defence against litigation. Furthermore, given the inherent danger of some of the proposals, the necessity for consent is in fact magnified. Following up on this, given the potential risks, it would seem that proposals 2, 3 and 5 required some

sort of pre-participation medical screening, and that all proposals required the presence of a person trained in First Aid. None of the proposals however contained information of these precautionary measures.

In addition to not mentioning consent, proposal 4 required participants to sign a release form. Given the fact that participants would have to drive home in an intoxicated state, this serves the self-interest of the investigators. Poor research design and inadequate consideration of the welfare of participants do not however absolve researchers from liability, and a release form should not constitute part of the recruitment process or methodology.

Coercion, Sanction and Paternalism

At the root of informed consent lies the notion of autonomy, or an individual's right to self-determination. This implies personal self-rule, remaining free from controlling interferences by others, e.g. researchers, teachers, coaches, and doctors. Further, autonomy is diametrically opposed to the notion of paternalism, where those in positions of power may restrict a person's freedom to act in a certain way, e.g. non-participation in research. Proposals 2-5 each exhibited, in varying degrees, elements of paternalism as defined above. When applied to informed consent, autonomy dictates that a decision to participate is made in the absence of control by others, and that there is a voluntary and intentional authorisation to an investigator to proceed with the intervention. USA Federal regulations hold that coercion or undue influence should be minimised (Zelaznik, 1993), thus stressing the freedom of choice of research participants over the possible utility of experiments.

Elements of coercion (or sanction in the case of non-participation) were present in all of the 5 research projects. It is acknowledged that a large proportion of the research participant base in HMS is drawn from "captive" populations (e.g. students, tournament participants), and consequently each research proposal

was designed along such lines. In proposal 1, participants were pre-selected, and a "loaded" deceptive question re: participation contained elements tending towards coercion. Proposal 2 utilised military trainees, in a pre-determined selection procedure. In cases such as these, it may be necessary to take extra precautions, as the institutional setting in fact relies on coercion and sanction. Proposals 3 and 5 both involved recruiting undergraduate university students with no details given of the recruitment process. In other words, students could have been told that they were required to participate to earn course credits; they could have been coerced in terms of the relative power position of their lecturer or the investigator (which could have been the same person); or they could have perceived that non-participation carried the risk of future sanction, e.g. disapproval, with the possibility of lower marks. Proposal 4 mentions "volunteers" but the fictitious union was approached to "provide" these participants, a situation which seems to bypass the autonomous individual elements of the consent process, and which implies the possibility of coercion. Put differently, there is a subtle, yet important, difference between volunteering and being volunteered.

Harm

Generally speaking, research in HMS poses little apparent risk to participants. A large body of research in the discipline could in fact be considered benign. For the remainder, much of the risk does not exceed that which would be encountered in everyday exercise situations. This however does not obviate researchers from identifying risk factors, and ultimately from protecting research participants. In fact, it could be legitimately contended that the researcher, not IRBs, should assume primary responsibility to consider the risk-benefit ramifications of research, and to determine the degree to which self-interest may be operating at the possible expense of rights of the participant. In Chapter II it was noted that, generally speaking, the risks associated with HMS research are negligible, and that reported injuries are largely trivial. Nevertheless, regardless of precautions, completely eliminating the risk of a serious event (e.g. cardiac arrest) during

exercise tests is clearly impossible. Further, while the risks might generally be considered negligible, evidence exists (see Chapter II) that current practices in some HMS and allied disciplines' research may be potentially harmful to participants. Risk can be defined as the **possibility** of injury (physical, psychological, or social) as a consequence of research participation. Of course, it is neither possible (nor practical in terms of advancing knowledge) to eliminate all risk, and it is incumbent on researchers and IRBs to establish whether the risks are significant. Detailed IRB guidelines exist (see Chapter II) regarding risk-benefit assessment, and potentially harmful projects may in fact proceed in certain circumstances. Nevertheless this thesis contends that carelessness is never justified, and that the rights of research participants ought to outweigh the desire of researchers to conduct research.

Four of the five research proposals involved the risk or possibility of significant harm to research participants. Proposal 1 involved IV infusion from research assistants, while 3 required depth hurdle and spike jumps of excessive height and repetition. Proposal 4 required some participants to ingest alcohol equivalent to 50% above the legal limit for driving, no mention being made of post-test care, the assumption being that they would drive themselves home. The final proposal (5) expected student recruits to perform a repetitive lifting task. This task was determined in advance by computer analysis (Charteris and Scott, 1990), to entail "Excessive Risk".

Cultural Considerations

Having earlier (see Chapter II) rejected the notion of ethical relativism in favour of universality, this thesis nevertheless explicitly recognises that ethical questions may pose special problems in transcultural contexts. Further, despite the acknowledged differences in perceived societal/individual interactions in various cultures, it is contended that basic ethical principles exist, such principles leading to general judgements that serve as justification for research methods. So, in

addition to bearing in mind the principle of autonomy, researchers should take into consideration the social and cultural environments of the participants. Specifically,

> "Research programmes should treat people as part of a community, ... (and) clear and understandable verbal communication is required with factual data as well as emotional and cultural considerations." (MRC, 1993, p3)

Further, cultural or linguistic differences do not necessarily constitute insurmountable barriers regarding the dissemination of information, and in cases where such differences exist, researchers may need to make an extra effort to communicate effectively with subjects. Potential participants in Research Proposal 4 were all English Second Language speakers, and no mention was made of any attempt to ensure comprehension by means of verbal and/or written translations of explanations. This is of course contrary to the view propounded earlier, namely that in addition to considering an individual's right to self-determination, cultural and societal factors should be borne in mind.

Confidentiality and Privacy

It is generally accepted that the right to privacy of research participants should be maintained, and that reassurance should be given that data will be treated confidentially, with respect to storage, coding, and access. This is of course particularly important when data are of a sensitive nature, or when such data, if disclosed, may affect the participant in any sort of deleterious way. The latter consideration is of particular importance in institutional settings, such as the military (proposal 2) and the taxi drivers union (proposal 4). Both sets of data could have a bearing either on continued membership of, or future performance in, the particular institution, yet participants were given no indication regarding confidentiality of data. Leaving aside the obvious violation of autonomy, this is in fact poor methodology as participants' concerns re: confidentiality could prejudice responses and performance, particularly for example in the attitudinal

and personality inventories. Put differently, it is contended that, in cases such as these, assurances of confidentiality will facilitate participation in the research.

An obligation to respect an individual's right to privacy should, where necessary, also be considered in research design. Of the 5 proposals, proposal 1 most notably violates this ethical requirement in that no provision is made for privacy when weighing participants and obtaining rectal temperature. This violation of research ethics is compounded when deception and the possibility of subtle coercion are added to the equation.

Deception and Debriefing

Many studies utilise deception of varying degrees in their methodology. One justification offered for this is that without deception, participant recruitment is made more difficult. This for example is the case in research proposal 1, where participants were recruited by being offered intravenous infusion that could assist recovery. Given that the primary question posed by the project was the efficacy of such infusion, the possibility of deception depended on the degree of potential recovery alluded to at recruitment. In proposal 4, the methodology employed mentioned that subjects would be unaware of their potentially dangerous treatment condition. No justifications were offered, and there was no mention of post-test care. Given the possibility of harm in 4 of the 5 proposals, it could be argued that non-disclosure of potential risks in fact constituted deception.

Deception takes various forms, the bottom line being that participants' awareness, perception or understanding of the purposes and procedures of the research is interfered with in some way. Viewed in this light, any methodology that does not include informed consent practises deception to some degree, the two concepts being mutually exclusive. In some cases, methodological requirements may make the use of deception or concealment necessary, but that was not the case for any of the research proposals disseminated for review as required by the methodology

of this study.

Where deception can be justified, adequate debriefing is recommended subsequent to the research. This involves personal feedback and serves to contextualise the results. Further, where deception has taken place, debriefing serves to negate negative perceptions generated by the deceptive protocol. (Further advantages of the debriefing process are discussed in Chapter II). Research proposal 1 made no mention of debriefing following the potentially deceptive methodology employed. In the sense of personal feedback, debriefing should form part of all research projects involving humans. In addition to imparting information about performance etc, the practice may increase the self-worth of participants, and may predispose them to future participation in research. At the very least, disseminating this sort of information can be viewed as a necessary courtesy on the part of investigators in exchange for the services rendered by the participant. None of the proposals mentioned debriefing, but it is necessary to focus here on proposal 4. Debriefing is considered most necessary here, given the safety aims within the professional practices of the participants, yet no explicit provision was made for feedback.

Responses to Proposals

Figure 4 provides a categorisation of responses to the research proposals according to disciplinary domain. Bearing in mind that each reviewer could respond to any area of expertise or interest (i.e. up to 5 possible responses per reviewer), the figure indicates a distribution of responses among domains. The implication of this is that although it would have been desirable to have a larger sample size, the responses received represented several areas of specialisation within the holistic discipline of HMS. Put differently, 5 research proposals, encompassing 9 research allied/sub-disciplines, in 3 broad domains, were represented in the reviews by relatively experienced researchers.

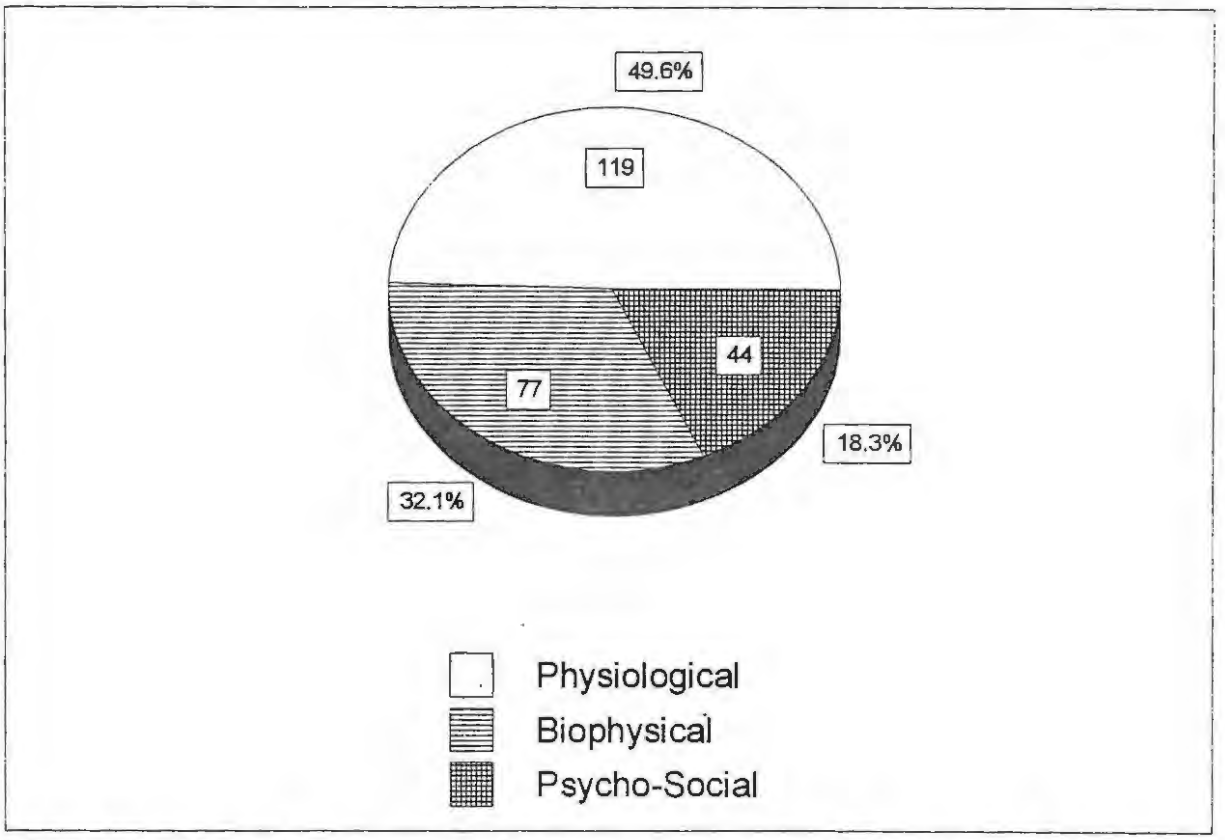

Figure 4: Responses to research proposals - categorisation according to inter-disciplinary domain.

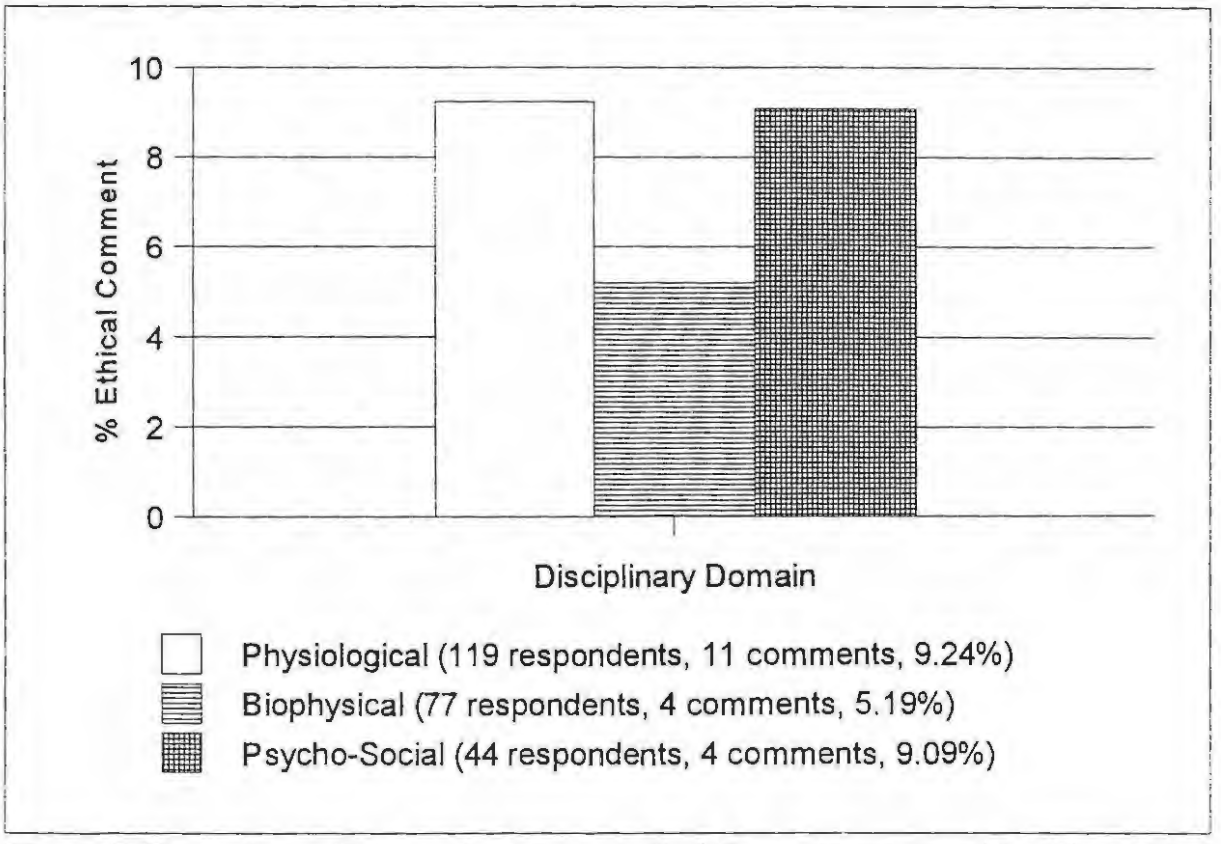

Figure 5: Percentage of respondents in each disciplinary domain who identified ethical problems in research proposals

Figure 5 provides an overview of the identification of ethical problems in the 5 research proposals, categorised into disciplinary domains. Of 240 reviews, only 19 comments were elicited regarding the ethical suitability of procedures, including lack of informed consent, potential for harm, need for IRB approval, consideration of cultural factors, coercion, violations of privacy, and confidentiality. That is, when reviewing specifically constructed, ethically questionable research proposals, fewer than 8% of responses in 3 major research domains delivered comment on the dubious ethical practices included in the project. It is worth noting here that the ethical problems in the research were of a dual nature. That is, they were not merely problems of **omission** (for example the lack of informed consent), but were problems of **inclusion** (such as the possibility of harm to participants). This in fact, in the view of this investigator, compounds the oversights in the review process. Both the paucity of responses identifying ethical problem areas, and the range of the percentage of such responses, make it difficult to venture any opinion regarding recognition of ethical issues within and across sub-disciplines. It could of course be argued that the small percentage of errors that did exist were due to differences in the spread of irregularities across proposals. This was however not the case, as Table III shows that four of the proposals each exhibited five problem areas, with the remaining one registering nine, indicating a range of ethical irregularities across proposals/sub-disciplines.

Proposal 1 - Exercise Science

Figure 6 and Table VII refer specifically to research proposal 1. Of the responses, 20.7% recommended acceptance, 67.2% advised revision, and only 12.1% recommended rejection. In terms of the focus of this thesis, the latter figure may even be misleadingly low when one considers that of the 7 rejection responses, only 3 were for ethical reasons (Table XI and Figure 6).

Figure 6 and Table VII also indicate that there were significant discrepancies

Table VII : Research Proposal 1 (Exercise Science): responses regarding revision, rejection, and reasons advanced for modification or rejection (numbers responding, with relevant percentages in brackets).

Classification	Numbers	Methods	Literature	Statistics	Ethics	Conceptual	Other
Revise	39 (67.2)	17	15	6	4	6	6
Reject	7 (12.1)	3	1	2	3	2	
Total	46	20	16	8	7	8	6

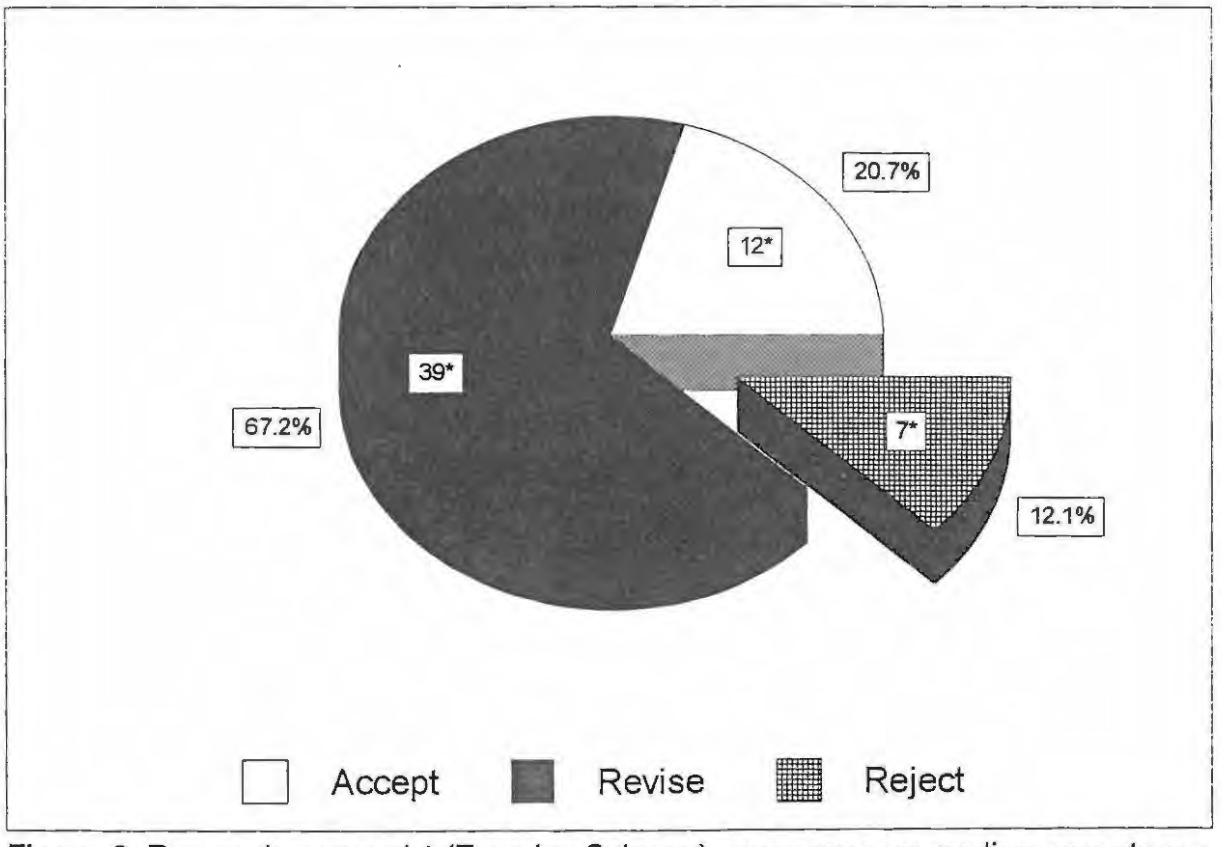

Figure 6: Research proposal 1 (Exercise Science) - responses regarding acceptance, revision, and rejection (* significant at $p < 0.001$).

(according to Chi-square analysis at $p<0.001$) between the observed and expected results. That is, the observed acceptances, revisions, and rejections are significantly different to what would have been expected. Given the weakness of Chi-square analysis with regard to hypothesis 1, this is not a particularly meaningful statement. What is meaningful is that a mere 12.1% of reviewers advised rejection, and of the 7 rejection comments from 58 reviewers, only 3 referred to ethical problems. Assuming adequate professional training and experience, the ideal situation would be closer to 100% rejection, most notably for ethical reasons.

Figure 7 and Table VII provide for categorisation of reviewers' comments. It is worth remembering that, in original form, the proposal had already been published in a respected, peer-reviewed journal. The only alterations were to the ethical practices or malpractices entailed by the research. This of course resulted chiefly in some alterations to methodology. Thus, upon checking reviewers' comments on methodology, if there was any hint of concern of an ethical implication, e.g. harm, privacy etc, the comment was regarded as an ethics notation and placed in that column. Once again then, the benefit of doubt was given to reviewers by inflating, where appropriate, the ethics column. As noted earlier, this was done to prevent bias on the part of the investigator in favour of the research hypothesis.

Given previous publication of the paper, it is interesting to note the total spread of comments by reviewers. Methodology (excluding ethics) was viewed as most problematic, resulting in 3 rejection and 17 revision comments (Table VII) (30.8%), followed closely by the literature review (24.6%). Ethics (10.8%), conceptual (12.3%), statistics (12.3%), and other comments (9.2%) provided the remaining percentages (Figure 7). Viewing this graphically, and reflecting on the focus of training in HMS, it is tempting to speculate that researchers are relatively conversant with practices regarding methodology and literature reviews, particularly when compared with the slightly more esoteric specialisations of ethics, statistics and the conceptual development of research. Of course a

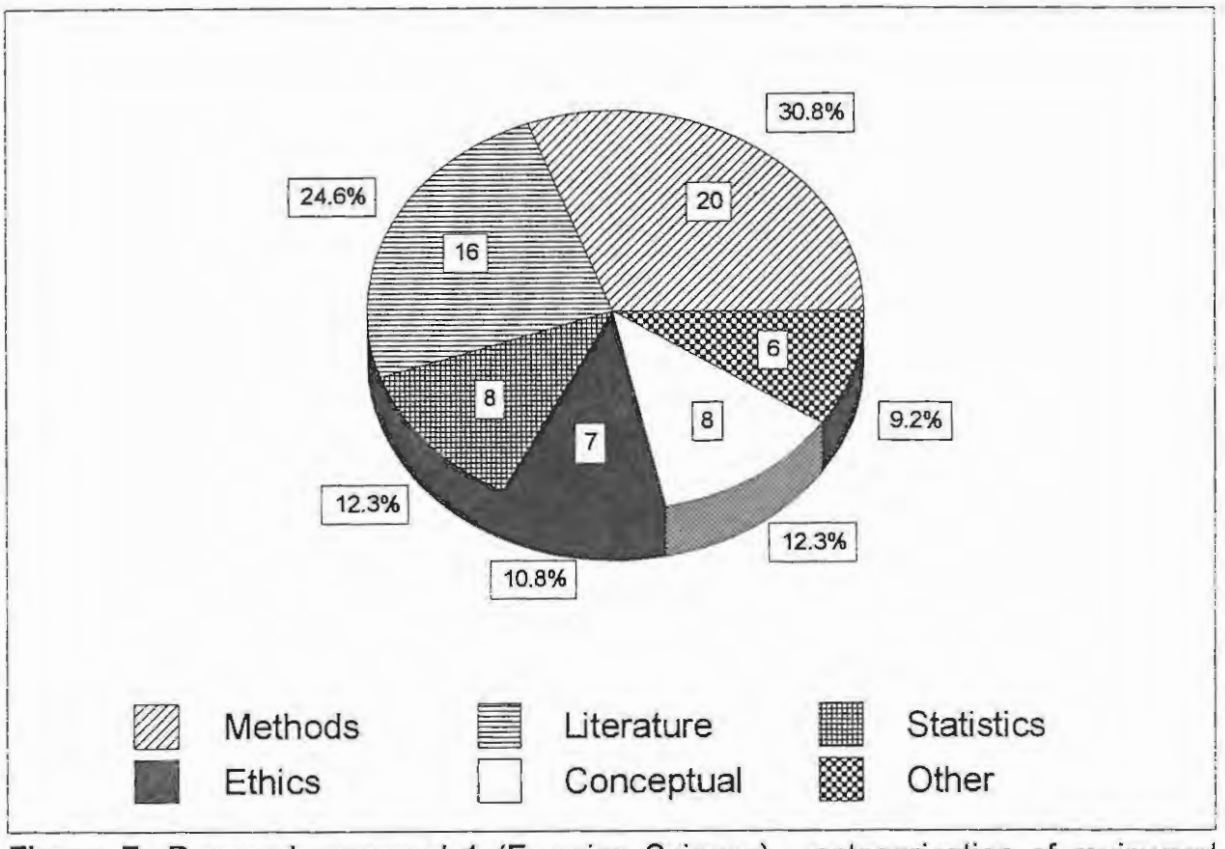

Figure 7: Research proposal 1 (Exercise Science) - categorisation of reviewers' comments.

negative view would contend that, given the publication/acceptance of the paper, the comments regarding methodology and literature indicate lack of unanimity among researchers, the implication being that training and standards are inconsistent. This is however not necessarily so. Thomas and Nelson (1996) report, for example, that between 1987 and 1991 the journal Research Quarterly for Exercise and Sport had an average reviewer agreement of 0.37 based on 363 manuscripts reviewed. Divergent results are reported for various journals, and whether reviewer agreement can be expected is debatable.

In summary of the findings regarding proposal 1, only 12.1% of presumably experienced researchers rejected the ethically flawed research, and only 3 of those 7 rejections were for perceptions of ethical irregularities.

Proposal 2 - Measurement and Evaluation

Figure 8 and Table VIII exhibit similar trends to those outlined above in that 36.1% of reviewers recommended acceptance and 52.5% suggested revisions. Only 11.5% of respondents suggested rejection, and none of these 7 outright rejections were for ethical reasons. A total of 2 respondents did comment on ethical issues, but these factors were not deemed by reviewers to be serious enough to warrant rejection. The differences between observed and expected responses were significant at the $p<0.001$ level, in that significantly fewer researchers rejected the proposals than would have been expected. This expectation is of course strengthened by the extrinsic factors of professional practice, experience, and training.

Reviewer comments are categorised in Figure 9 and Table VIII. Here it is noteworthy that ethical comments constitute only 4.3% of the total. Conceptual problems (e.g. whether the problem was worth addressing) at 31.9% and methodology at 29.8% of comments were focussed on by reviewers, as was the

Table VIII : Research Proposal 2 (Measurement and Evaluation): responses regarding revision, rejection, and reasons advanced for modification or rejection (numbers responding, with relevant percentages in brackets).

Classification	Numbers	Methods	Literature	Statistics	Ethics	Conceptual	Other
Revise	32(52.5)	14	10	6	2	8	
Reject	7(11.5)					7	
Total	39	14	10	6	2	15	

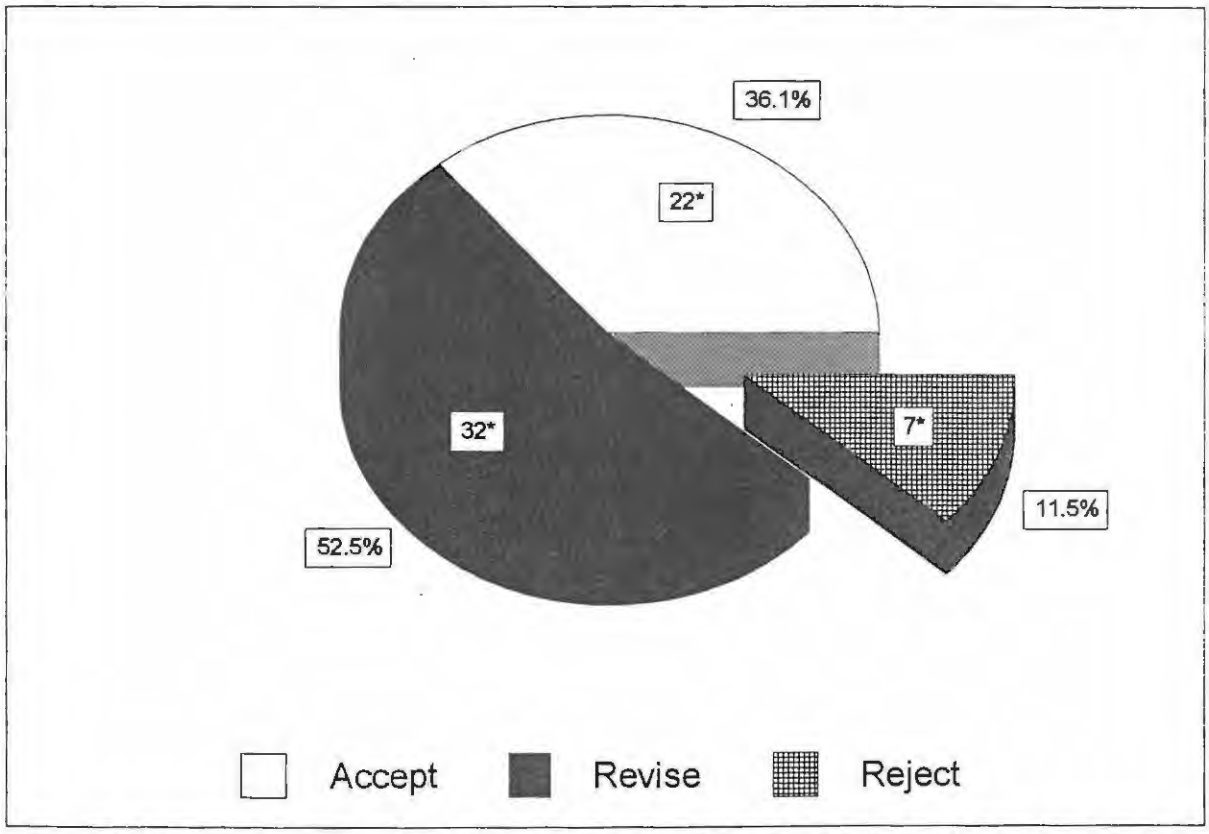

Figure 8: Research proposal 2 (Measurement and Evaluation) - reviewers' responses regarding acceptance, revision, and rejection (* significant at $p<0.001$).

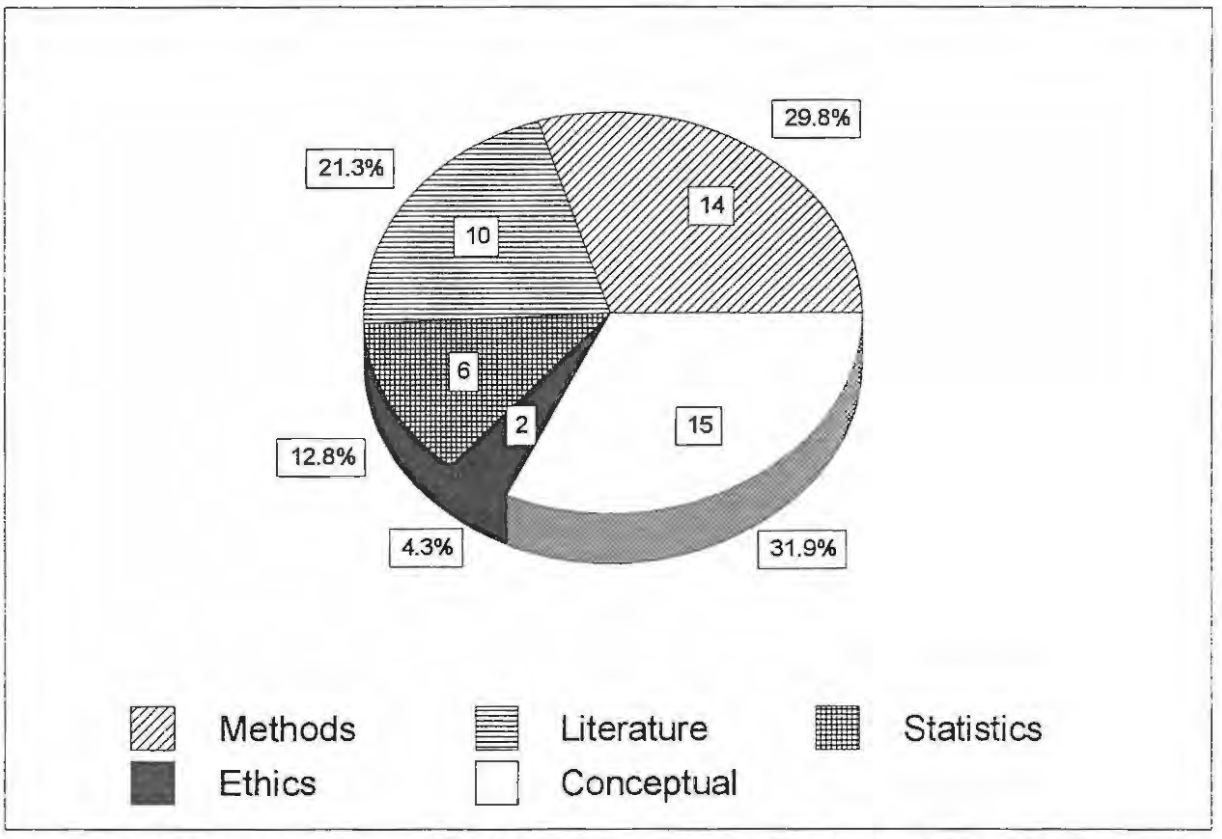

Figure 9: Research proposal 2 (Measurement and Evaluation) - categorisation of reviewers' comments.

literature review (21.3%) which was not as current as it could have been. This relegated statistics (12.8%) and ethics (4.3%) to the status of also-rans in terms of comments worth mentioning in the review process. These comments, in light of the fact that this proposal was a previously approved and conducted graduate project, again possibly indicate either lack of unanimity regarding what constitutes professional practice in HMS, or inconsistency in review processes in the discipline. More importantly, the somewhat abstract notions of ethics received little comment, despite problem areas being deliberately inserted.

As for proposal 1, respondents to the Measurement and Evaluation proposal seemed to not recognise ethical issues that impinged on how the research would be conducted. Only 11.5% of 61 responses proposed rejection of the ethically flawed research. More noteworthy though is that none of those rejections were for ethical reasons.

Proposal 3 - Biomechanics

In terms of acceptance, revision, and rejection, reviewers' comments on the Biomechanics proposal continued the trend of proposals 1 and 2. In fact, in terms of the research hypothesis, Figure 10 and Table IX present the bleakest picture among the 5 proposals, with only 1 reviewer rejecting the proposal, this rejection being justified by dissatisfaction with methodology, statistics and conceptual issues. A full 58.3% of reviewers recommended acceptance, with 38.9% suggesting revisions. As mentioned, the single rejection (2.8% of 36 responses) made no mention of ethical unacceptability. As for proposal 2, 2 ethical comments were received, but the ethical issues were deemed by reviewers to be not serious enough to warrant rejection. Once again, the differences between observed and expected responses were significant at $p<0.001$, leading to a rejection of the null hypothesis. It is clear that researchers did not recognise ethical problems specifically inserted into the research proposal.

Table IX: Research Proposal 3 (Biomechanics): responses regarding revision, rejection, and reasons advanced for modification or rejection (numbers responding, with relevant percentages in brackets).

Classification	Numbers	Methods	Literature	Statistics	Ethics	Conceptual	Other
Revise	14 (38.9)	2	2	8	2	4	
Reject	1 (2.8)	1		1		1	
Total	15	3	2	9	2	5	

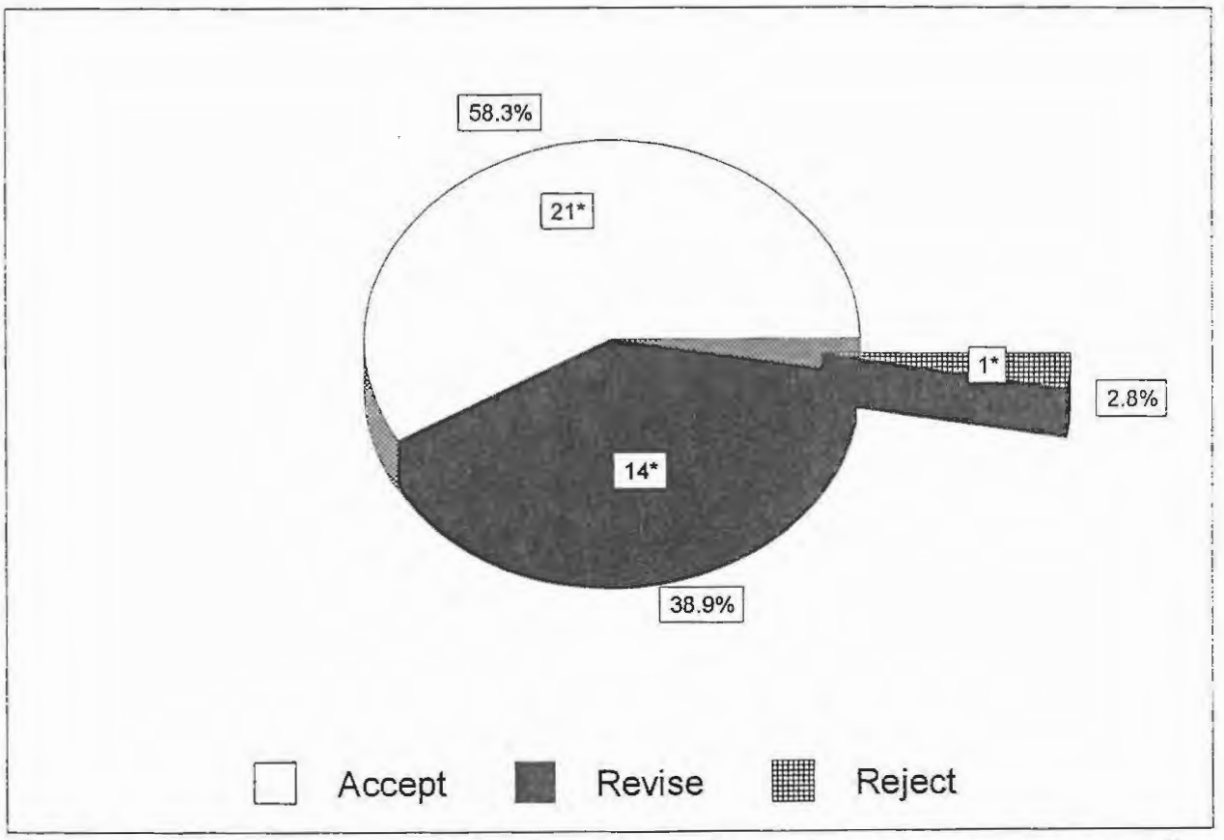

Figure 10: Research proposal 3 (Biomechanics) - reviewers' responses regarding acceptance, revision, and rejection (* significant at $p<0.001$).

Figure 11 and table IX show that the largest category of comments elicited was statistics (42.9%), followed by conceptual with 23.8%. This may have been due to the fact that the proposal was of a more technical nature than the others. There was a relatively even distribution among the remainder of comments, namely methods (14.3%), ethics (9.5%) and literature (9.5%).

Similarly then to the previous two proposals, reviewers failed to note and act on (in their capacity as potential supervisors) ethical irregularities in the Biomechanics research proposal. Only 1 reviewer rejected the paper, and that rejection was in no way based on the perception of potential ethical irregularities.

Proposal 4 - Perceptual and Motor Learning

Figure 12 and Table X are similar to the results already presented, in that a significantly small proportion of reviewers recommended rejection. Of 44 responses to the Perceptual and Motor Learning proposal, only 9.1% proposed rejection, with 36.4% and 54.5% suggesting acceptance and revision respectively. In some respects this proposal was the most problematic of all, with potential ethical violations in 9 discrete areas (see Table III). The violations ranged from benign to possibly life-threatening, and it was expected that researchers would isolate both moral and legal problems posed by the proposed conduct of the research. These expectations were not met, with only 1 rejection commenting on a single ethical irregularity. The differences between observed and expected responses were again significant at the $p<0.001$ level.

Figure 13 and Table X show that perceptions of statistical problems (34.1%), methods (22.7%) and the literature review (18.2%) dominated reviewers' comments at the expense of conceptual (13.6%), ethics (9.1%), and other (2.3%) perceived problem areas. As for the other proposals, this is somewhat surprising, given publication of the original paper in a prestigious, peer- reviewed international journal.

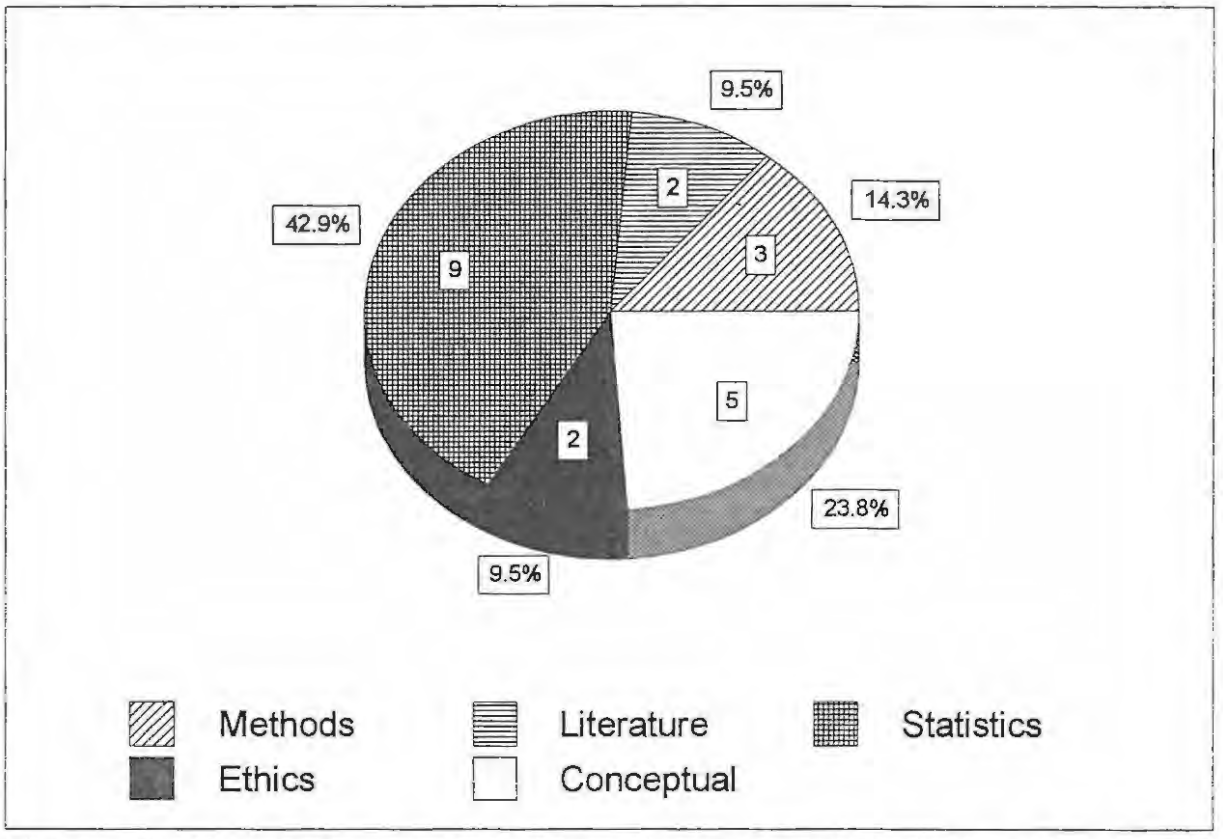

Figure 11: Research proposal 3 (Biomechanics) - categorisation of reviewers' comments.

Table X : Research Proposal 4 (Perceptual and Motor Learning): responses regarding revision, rejection, and reasons advanced for modification or rejection (numbers responding, with relevant percentages in brackets).

Classification	Numbers	Methods	Literature	Statistics	Ethics	Conceptual	Other
Revise	24 (54.5)	10	7	14	3	5	1
Reject	4 (9.1)		1	1	1	1	
Total	28	10	8	15	4	6	1

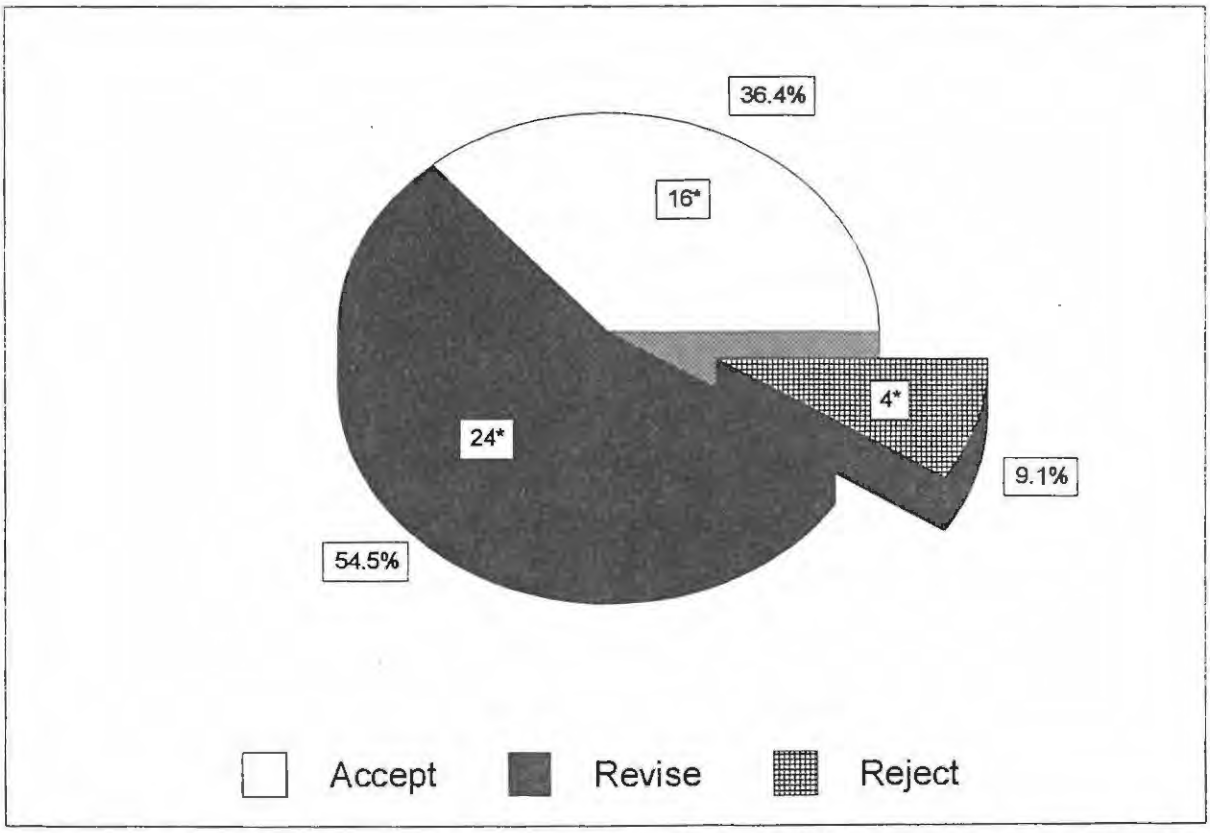

Figure 12: Research proposal 4 (Perceptual and Motor Learning) - reviewers' responses regarding acceptance, revision, and rejection (* significant at $p<0.001$).

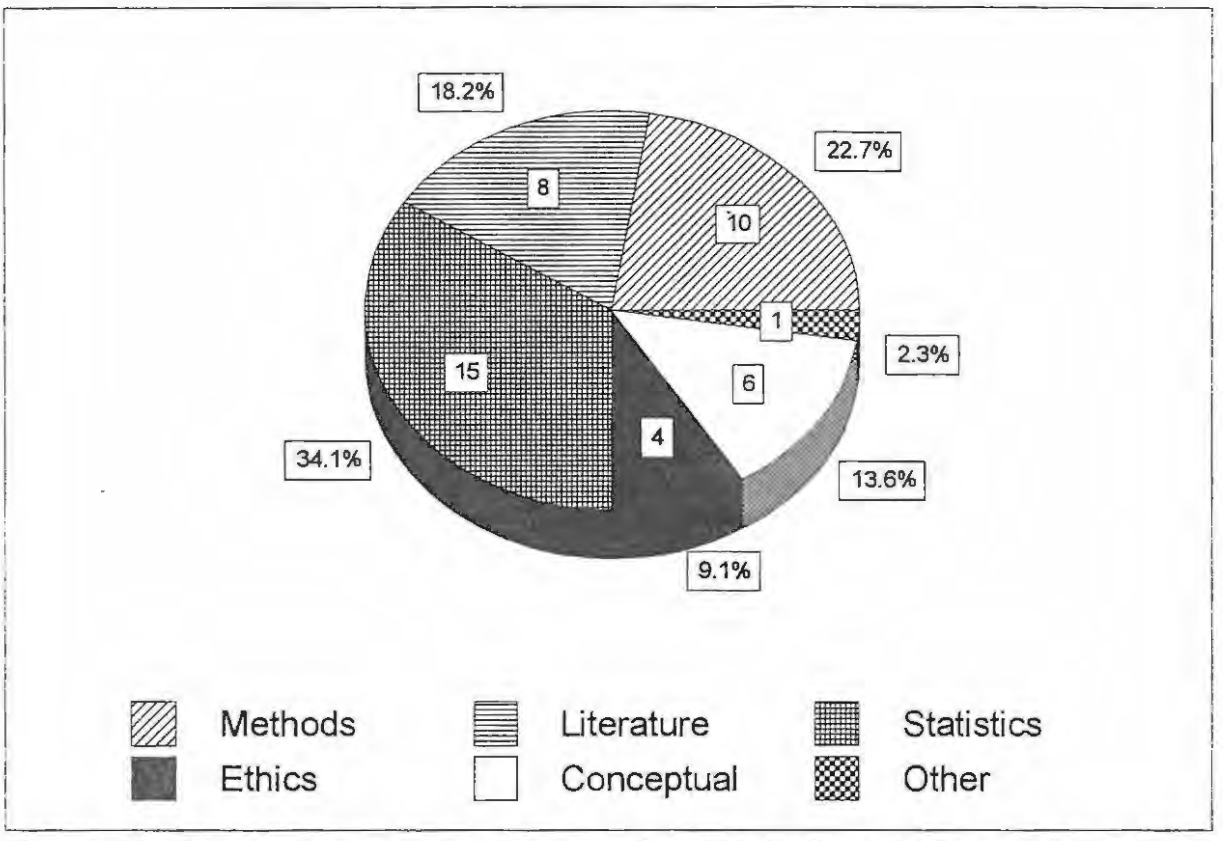

Figure 13: Research proposal 4 (Perceptual and Motor Learning) - categorisation of reviewers' comments.

In line with results of the previous proposals then, respondents to the Perceptual and Motor Learning proposal failed to recognise the ethical irregularities inserted into the work, in this case most notably the possibility of harm to participants. Of the 9.1% rejections, only 1 ethical comment applied to such rejection.

Proposal 5 - Ergonomics

In what by now seems a well-established trend in this research, respondents to the Ergonomics proposals largely failed to identify the potentially problematic ethical issues inherent in the research. Figure 14 and Table XI indicate that a full 68.3% of respondents recommended unconditional acceptance, despite the real possibility of injury to participants. This is of some concern, as computer simulation and other ergonomics software enables simple, valid and reliable pre-determination regarding the dangers inherent in lifting tasks. A further 26.8% suggested revision, and thus only 4.9% (2 responses in real terms) of reviewers recommended rejection. It is noteworthy that none of the rejection responses included ethical comment. As for the other proposals, the differences between expected and observed frequencies were significant at $p<0.001$.

In terms of categorisation, Figure 15 and Table XI show that conceptual issues (46.2%) and statistics (23.1%) dominated the responses to this proposal, followed by methods (15.4%), literature (7.7%) and ethics (7.7%). Again, the unaltered paper, a collaborative effort between two universities, had been published in original form in a peer-reviewed journal.

As with the other 4 proposals, despite the deliberate insertion of ethical irregularities (most notably the possibility of harm, and coercion or sanction), respondents to the Ergonomics proposal did not identify such potential problems in the research. Notably, no ethical comment was elicited in terms of the two (4.9%) rejections of the paper. (Table XI).

Table XI : Research Proposal 5 (Ergonomics): responses regarding revision, rejection, and reasons advanced for modification or rejection (numbers responding, with relevant percentages in brackets).

Classification	Numbers	Methods	Literature	Statistics	Ethics	Conceptual	Other
Revise	11(26.8)	2	1	3	1	4	
Reject	2(4.9)					2	
Total	13	2	1	3	1	6	

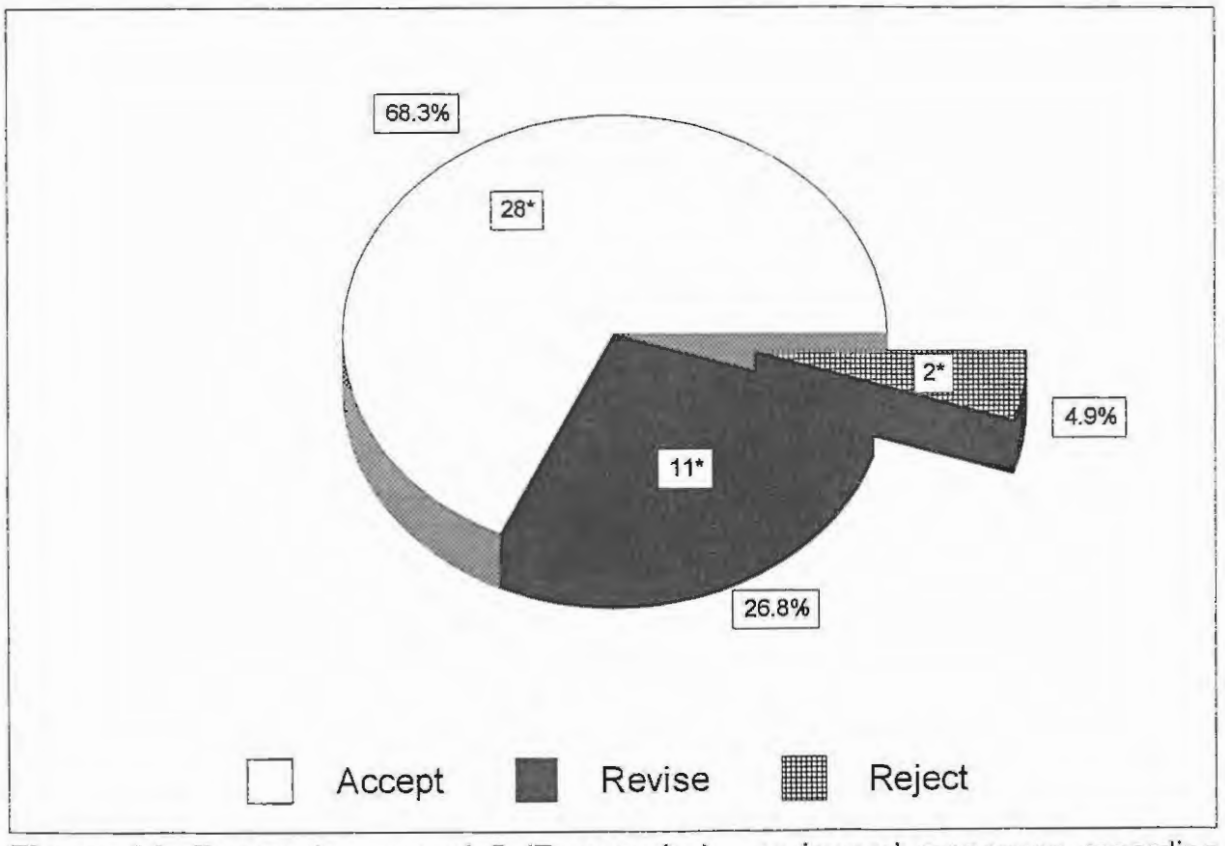

Figure 14: Research proposal 5 (Ergonomics) - reviewers' responses regarding acceptance, revision, and rejection (*significant at $p<0.001$).

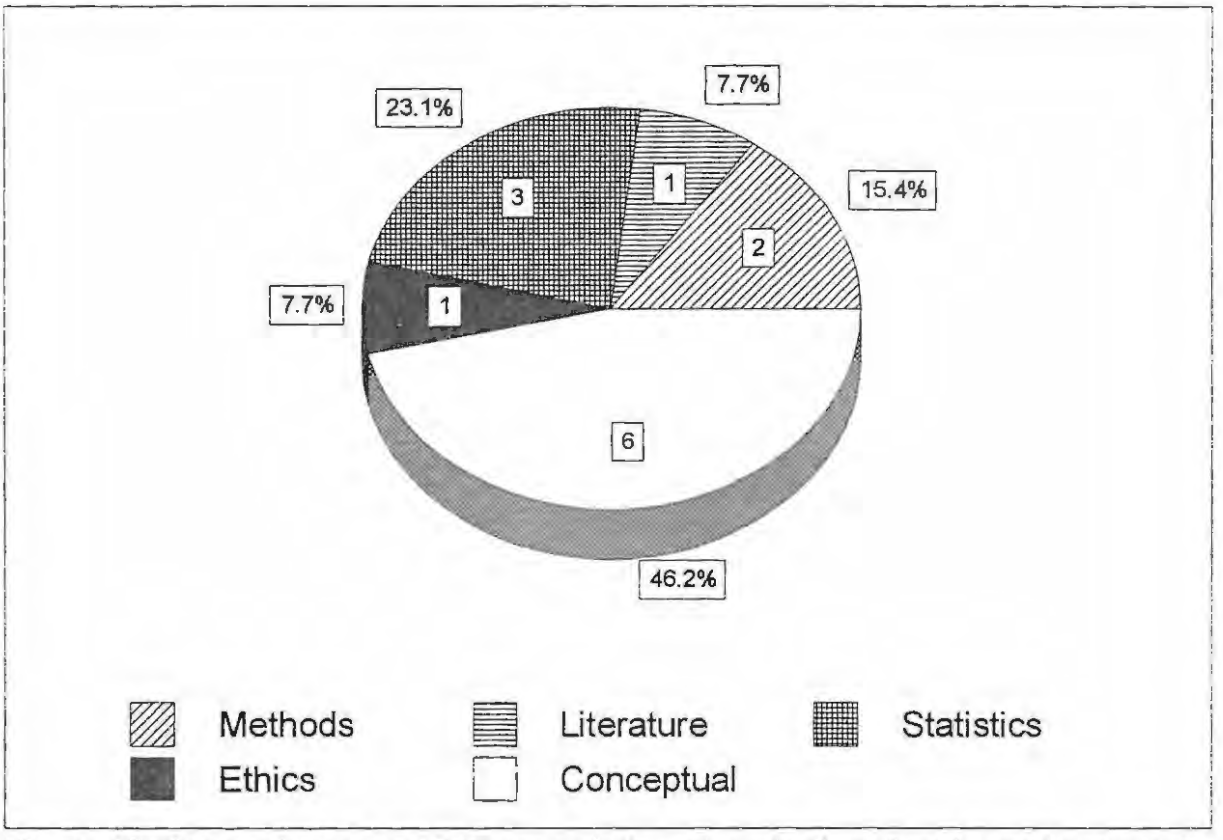

Figure 15: Research proposal 5 (Ergonomics) - categorisation of reviewers' comments.

Summary of Findings for Proposals 1- 5

Figure 16 graphically depicts a summary of the categorisation of reviewers' responses to the 5 research proposals. Generally speaking, the primary area of concern for reviewers related to methodology (25.8%) followed by statistics (21.6%), conceptual issues (21.1%), and the literature referred to (19.5%). This represents a relatively even spread of responses, and in fact makes the paucity of responses regarding ethical concerns even more marked. Ethical comments comprised a mere 8.4% of the total, this despite the fact that the construction of the proposals should theoretically have predisposed towards a majority of such responses. So, despite the deliberate insertion of sensitive moral problems, the ethical issues involved in research received the least mention overall. The oversights on the part of researchers are perhaps magnified when one considers that some reviewers, whilst noting ethical issues, saw fit to still accept projects without revision. Consequently, of the 21 rejections, only 4 were rejected explicitly for ethical reasons. That is, of the 240 responses, only 1.8% of comments listed ethical concerns as sufficient reason for rejection (Table XII). When considered in the light of the potential violations of ethical principles of the proposals outlined earlier, this is indeed cause for some concern.

Discussion on Responses to Proposals 1- 5

As noted earlier, there has been an ever-increasing demand for research to be undertaken in the sub-disciplines of HMS. In order to satisfy considerations of relevance, and our continual quest for knowledge, the vast majority of this research involves humans, with proposals 1-5 serving as examples. The "progress imperative" view of science has however historically resulted in experimental procedures where research participants are subjected to manipulative and even invasive procedures. The responses to proposals 1-5 indicate that HMS research may be no exception to this historical trend, with reviewers evincing little concern for the wellbeing of participants. While

Table XII : Research Proposals 1-5: summary of responses regarding rejection, and rejection for ethical reasons (numbers, with relevant percentages in brackets).

Proposal	Rejection	Rejected (Ethics)
1. Exercise Science	7 (12.1)	3 (5.9)
2. Measurement and Evaluation	7 (11.5)	0 (0)
3. Biomechanics	1 (2.8)	0 (0)
4. Perceptual Motor	4 (9.1)	1(2.5)
5. Ergonomics	2 (4.9)	0 (0)
	21(8.1)	4 (1.8)

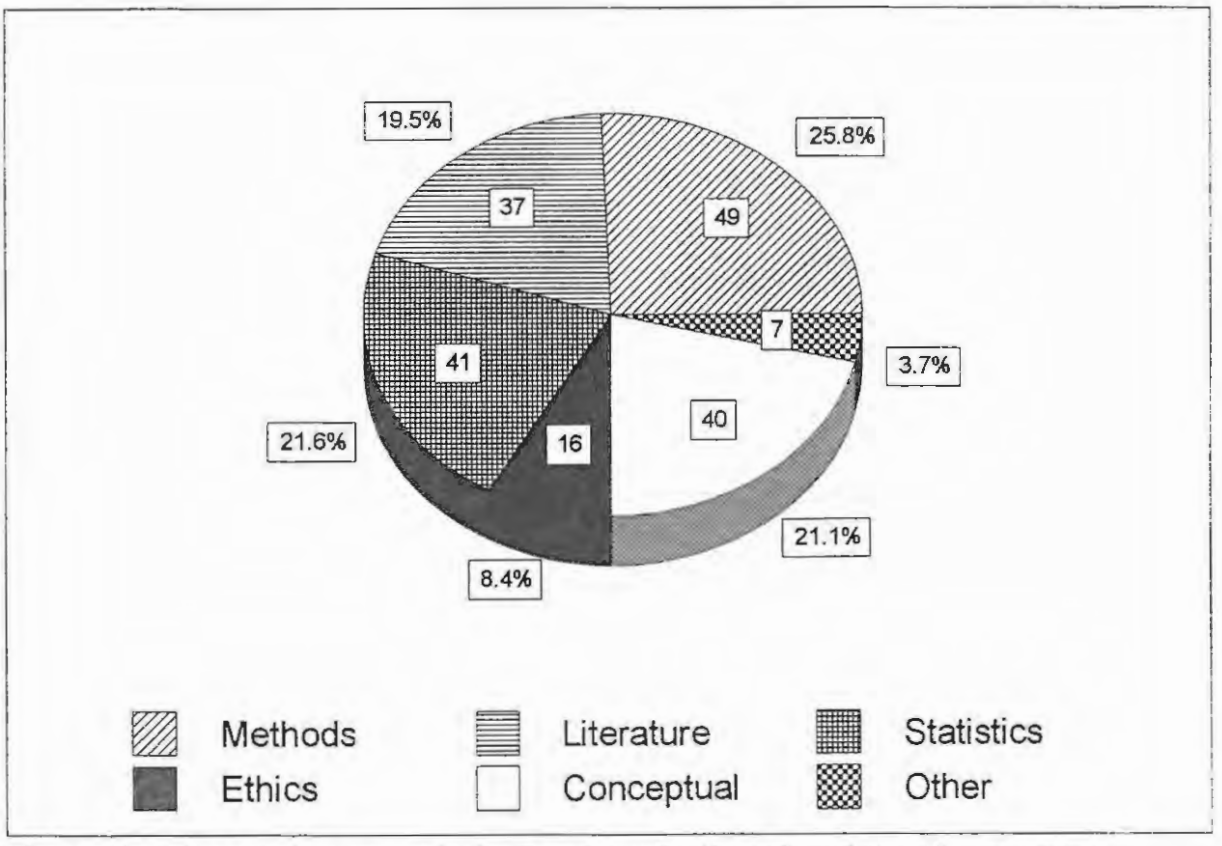

Figure 16: Research proposals 1 - 5: categorisation of reviewers' responses.

maleficence was presumably not intentional, it is clear that nonmaleficence was not a critical factor in the acceptance of questionable research proposals. It must however be borne in mind that the response sample cannot be deemed representative of the discipline as a whole. While responses were received from 15 countries, the distribution was skewed towards responses from Africa, a continent which has not contributed significantly towards research in HMS. Nevertheless, many of the non-South African responses were from commonly acknowledged leaders in the field of HMS research, and while individual data cannot be presented due to considerations of confidentiality, it is worth noting that those individuals were just as deficient at recognising ethical irregularities as their less well-known colleagues. Accepting this, it is contended that the data presented, while suffering from limitations, provide some justification for the conclusion that insufficient attention is paid to ethical issues in HMS research. This contention provides some support for the conclusions reached by the critical analysis in Chapter II.

It was noted in Chapter II that many researchers, if they consider the issue at all, view their investigation as fundamentally risk-free. This seems to be the case for reviewers of the 5 proposals. Risk in this sense refers to the **possibility** of injury as a result of research participation, such injury being physical, psychological or social. A case could be made that reviewers overlooked the potential for harm, as generally speaking, there are very few risks associated with HMS research, and very few injuries reported. For example, Cardon **et al.** (1976) found that injuries were reported for 0.7% of 133 000 research participants, with 80% of the reported cases considered trivial. From this they concluded that the risks of participation in nontherapeutic research may be no greater than those occurring in everyday life.

However, Bok (1978) points out that it is not always easy to know whether, and to what extent, research carries direct risks. Further, the very nature of research means that while procedures may be carefully implemented and controlled, the

specific effects cannot be pre-determined (Brodie and Stopani, 1990; Olivier, 1995). If they could, the proposed research would be redundant, leading to new questions. This was in fact the basis of the alterations to the published papers presented to reviewers as proposals 1-5. Generally speaking, they were altered in invasive ways with injurious potential in order to possibly answer new questions.

In a matter of some relevance to the research practices inherent in proposals 1-5, Scocozza (1989) has questioned whether research involving humans is based on shared interest, or whether certain areas of research contain different or even antagonistic interests. However, before discussing the results of responses to the proposals in terms of a possible conflict between self-interest and virtue, it is necessary to view the proposals from a background of what ethics, and particularly research ethics, is or ought to be. Ethics investigates the fundamental principles that ought to be found in a particular field of activity (Flew, 1984), such as HMS research. Further, it seeks to articulate general principles and rules that govern our judgements and our activities (Veatch, 1989). Clearly HMS is no exception, and the primary question then becomes one of which ethical principles should be accorded primacy, and for what reasons. Put differently, as in other professions, HMS researchers are faced with questions such as "What ought I to do?", and "Why ought I to do so?"

The first is of course a normative question. That is, it is about substantive issues and concerns the rightness or goodness of particular actions. As such, normative judgements are prescriptive, telling us what we ought and ought not to do. Such judgements are justified by appealing to ethical theories, the most relevant in research contexts being utilitarian and deontologic approaches.

It has been contended that current research practices in HMS are heavily skewed in favour of utilitarian ethics (Brodie and Stopani, 1990; Scocozza, 1989), which are characterised by the importance of consequences or the ultimate usefulness

of acts that one performs. This viewpoint would probably be supported by Malloy et al. (1994), who contend that HMS research operates from a logical-positivist and functionalist worldview. In contrast, deontologists contend that other factors (e.g. motives) are important in determining obligations and courses of action. Generally speaking, deontology is an ethical theory of duty and obligation. Rule deontologism in particular recognises the value of the practical application of rules and standards. Further, the principle of universalisability supports rule deontologism if one accepts that in making a particular value judgement, you are implicitly making a general one.

Do the results presented earlier lend support to Brodie and Stopani's (1990) contention that HMS research is driven by utilitarian ethical convictions? On the surface, the reviewers' responses in and of themselves give no direct indication of adherence to any particular ethical theory. However, the marked absence of application of deontological theory gives a fairly clear indication that, if any ethical theory drives HMS research, it is more likely to be utilitarian than deontologic. This conclusion is supported by the review (see Chapter II) of current research practice in HMS research, which indicates that "results driven" research has the potential, through violations of commonly accepted ethical practices, to harm subjects. In cases such as these it seems that the rights of the researcher to conduct research outweigh the rights of research participants. When the good/beneficial consequences outweigh the bad/harmful ones (for everyone affected by the action), the justification for the action is of course utilitarian.

In making moral decisions in real-life research contexts, normative principles are used to guide actions. Principles are general in nature (e.g. beneficence/nonmaleficence) and specific rules may be subsumed under them (e.g. you ought not to expose research participants to harm). Moral judgements generally have a three-tiered structure, namely Principles, Rules, and Particular Judgements (Veatch, 1989). It could be contended that there are three major principles, namely respect for persons, beneficence (including nonmaleficence),

and justice, the first principle being all- embracing. Veatch (1989) lists the following criteria as being important in evaluating and justifying research: 1. the results should be important; 2. there should be a reasonable prospect that the knowledge sought will be achieved; 3. alternative methods should be explored before employing humans as research participants; 4. risks to participants should be minimised; 5. the principle of utility should be taken into account; 6. participant selection should be fair and equitable (justice); 7. voluntary informed consent must be obtained (autonomy); and 8. considerations of privacy, confidentiality, veracity and fidelity set limits on the conduct of research.

Numbers 6-8 above are clearly deontologic in nature. The first five can be viewed as necessary but not sufficient conditions for ethical research. The remaining three, if absent, may morally invalidate research that satisfies the first five criteria, and as such are necessary conditions for ethical research. Clearly, the majority of respondents to research proposals 1-5 ignored (or at best overlooked) the necessary conditions. In general the proposals flagrantly violated deontologic conceptions of the autonomy of research participants through not requiring informed consent. Participants' rights to self-determination (coercion, "captive" populations, deception, paternalism) were accorded little or no importance, as were rights of privacy and confidentiality. This, allied with the review of selected recent research publications, strongly suggests that current research practices in HMS research are driven by utilitarian, consequence- based motives. Consequential calculations *per se* are not necessarily wrong or harmful. However the absence of a duty- or rights-based culture of research ethics could in fact mean that in certain cases research is driven by self-interest, rather than by either beneficial consequences or virtue. The reality of pressures to publish, finish a degree, add to curriculum vita, or obtain research funding, to say nothing of the "progress imperative" view of science, enhances the potential for researchers to engage in malpractices such as unethical treatment of research participants.

Respect for persons has two different implications for research participants. The first stresses autonomy, i.e. respect for individual rights, while the second emphasises personal well-being (beneficence). The beneficence approach may in fact stress long-term benefits over short-term harm (consequential), possibly placing it in conflict with the autonomy frame of reference for research ethics. On the surface, the responses presented seem to imply that respondents were concerned with long-term benefits in terms of increasing knowledge in HMS. For example, the knowledge sought in the Perceptual and Motor Learning and Ergonomics proposals could save lives on the road and reduce debilitating back injuries in industry respectively. However, in both cases such knowledge is readily available through previous research. Put crudely, not even the principle of utility can be called upon to justify the research practices implicitly condoned by the respondents in this project. Put differently, the question of a collision between contrasting frames of research ethics does not even arise, with the proposals, as accepted by reviewers, satisfying neither deontologic nor utilitarian principles.

The results of this study indicate that many among the researchers sampled, if they consider the issue at all, view their investigations as fundamentally risk-free. Of greater significance though is Bok's (1978) contention that others who do perceive some ethical problems inherent in research may consider the potential benefits to humanity as sufficient compensation. This is of course a utilitarian rather than deontologic approach to research ethics.

Given the perceived lack of an ethical theory in terms of a guiding force in HMS research, it seems appropriate to make some recommendations. Despite the results of this project, it is likely that most researchers would agree that the application of a system of research ethics is desirable. This of course assumes that the ethical problems in proposals 1-5 and in current research practices were overlooked rather than ignored. Put differently, given the absence of significant benefits to mankind derived from the proposed research, the charitable

assumption is that respondents were not driven by a particular research ethic when conducting their reviews. If they were driven by a theory, it would be a consequential one, with the preceding discussion highlighting the problems inherent in such an approach.

What are the implications of this lack of direction? Firstly, HMS, as a research-based profession needs to embrace an ethical theory to serve as a frame of reference for its practices. This supports Borchert and Stewart's (1986) contention that to advocate a "hands off" approach to normative issues would constitute not only an abnegation of the traditional goal of moral philosophy (i.e. the good life), but also an unacceptable disengagement from important moral issues. Philosophical insight in the form of ethical theory is needed to give direction on these issues. Ethical theories however need to be defensible. Put differently, the theories that we apply to real situations that we encounter in the lived world need to be justified. Practically speaking, the profession as a body needs to decide between a utilitarian or a deontologic approach.

We have noted strong disagreements between the two theories. Deontologists focus on duties, rights and obligations, while consequentialists see consequences as being overriding in evaluating the moral worth of an action (Borchert and Stewart, 1986). Which should hold sway in the current HMS research environment?

There are problems associated with the application of utilitarian ethical theory to research ethics. Firstly, obligations and rights may be ignored, leading to situations where innocent persons may suffer harmful consequences. Rights of self-determination were of course ignored for all 5 proposals, with the real possibility of harm being inherent in the procedures of proposals 1, 3, 4, and 5. The potential gravity of this situation would be magnified if the research participants were children, or suffered from some diminished capacity in respect of decision making. As it is, each cohort was in fact a "captive" population

potentially subject to some form of coercion. Further, acceptance of teleological theory implies that the rights of the majority automatically enjoy precedence over those of the minority. Research examples would include experimentation on minority ethnic groups, or incompetent persons. The point to remember here is that what is right for the majority may be morally good, but mere belief in that quality or result does not necessarily mean that it is in fact the most acceptable action. To use a non-research example: the fact that the majority of White South Africans believed that apartheid was right did not make the policy morally acceptable. In a quasi-research context the belief on the part of researchers that Thalidomide would have beneficial consequences led to methodologically unsound research and tragic human consequences. With regard to the proposals sent to reviewers by this researcher, respondents seemed to believe that there were either no negative ethical implications, or they dismissed such implications as unimportant. The consequence of implementing the advocated procedures may in reality have led to harm to research participants.

Teleological theories are however useful in that they serve to direct attention to practical consequences. Nevertheless, hedonistic calculations are difficult to perform, and it seems likely that most researchers will, at least subconsciously, overestimate the benefits and underestimate the risks of their projects. This is where a human factor in the form of self-interest comes into play. In spite of these drawbacks, utilitarianism can provide practical guidelines for assessing the morality of actions.

Generally speaking, in moral philosophy a deontologic approach to research ethics has been more popular than consequence-based theories. Given the previous allusion to the prominence of utilitarianism in research contexts, this in fact suggests a discrepancy between theory and practice. Put differently, moral philosophers may advocate a deontologic approach, whilst in practice researchers apply utilitarian considerations when making moral decisions. The limited results of this study seem to provide tentative support for this discrepancy.

Despite the theoretical support for deontologic ethics, and the concomitant rise to prominence of consideration of human rights, duty-based theories also have some problems. Generally speaking, deontologists hold that rules determine our actions in certain situations. An example of this is the injunction contained in several professional ethical codes that researchers ought to obtain written first-person informed consent from research participants. However, some situations are unique, and rules do not apply. For example, a preventive health project focusing on a rural population may lead to direct benefits for that population and the population at large. However, what if the intended participants are illiterate and are steeped in traditions of community rights rather than notions such as autonomy? In a case like this, rigid acceptance of a rule-based theory means that beneficence with no harmful consequences to anyone is superseded by a notion that is foreign to the participants. This example supports a stock objection to deontologism - that no rule can be framed which does not admit of an exception, and no set of rules can be framed which does not admit of conflicts between the rules (Frankena, 1973). Deontologism then has not provided us with a conflict- and exception-free system of rules about what we ought to do.

Also, rigid compliance with rules may deflect attention from consequences altogether, and may replace genuine care and legitimate concern for the welfare of others. The reverse of this may be that rigid insistence on compliance with rules may lead to situations where researchers ignore the laid-down procedures. In situations such as this, investigators may attempt to avoid cumbersome administrative procedures in order to get on with their work, thus eroding the very ethic which the rules are intended to promote.

This introduces the argument that guidelines and regulations are necessary but not sufficient conditions to prevent research abuses. For example, regulations on medical ethics in Germany prior to WWII were detailed and stringent, yet they were not sufficient to prevent the abuses perpetrated in prisoner-of-war camps. Also, despite the formulation of the Nuremberg Code, the Declaration of Helsinki

and subsequent ethical codes, ethically questionable research continued, such research generally being justified on utilitarian grounds. In South Africa, the publication in 1979 of the MRC Guidelines on Ethics for Medical Research reflected a greater appreciation of the importance of ethics in research and clinical practice. However, the fact that guidelines are not sufficient is again borne out by the recent "Virodene" controversy (The Star, 1997; Weekly Mail and Guardian, 1997), which provides a good example of researchers deliberately violating ethical rules, and justifying their conduct by appealing to the potential for favourable consequences.

Further, the results of this study may provide a good case for the codification of ethical guidelines for the HMS profession, particularly in research scenarios. Whilst it is acknowledged that rules may not be sufficient, codification could be a good starting point. The fact that only 1.8% of respondents' comments listed ethics as sufficient reason for rejection of proposals is cause for some concern (Table XII). Put more strongly, if the response sample permitted generalisation, it could be viewed as an indirect indictment of hypothetical research practices in HMS, with ethical concerns either not being applied or being applied inconsistently to such practices. It could of course be argued that despite the claimed holism of the discipline, the disparate sub-disciplines in fact constitute a fractured whole, leading to the inconsistencies noted. This would however only serve to strengthen the argument for an inclusive ethical codification, which would ideally be allied to a formal programme of education in research ethics, To conclude, it is often presumed that those who know what is ethical will not behave in immoral ways, but this is not necessarily so (Caplan, 1992). Further, rules and guidelines may be desirable and necessary, but they are not a sufficient condition to prevent abuses in research contexts.

Despite the potential problems outlined above, rule-based approaches to applied ethics continue to be popular. One of the reasons for this is that different moral dilemmas are in fact similar in several relevant respects. This is in fact the case

for research proposals 1-5, which for example all potentially violate, *inter alia*, the principle of autonomy. A consistent rule-based approach here would hopefully simply ensure that adequate measures are taken, through the informed consent process, to attain comprehension and voluntary participation. In short, across research proposals 1-5, rules would have been useful in their universality. Also, from a practical point of view, rules are useful in that they can provide a "moral checklist" against which to measure the ethical acceptability of a proposed research project. This saves time, assists those without the necessary expertise in ethical decision making, and encourages consistency in moral behaviour. Finally, ideally rules will respect the rights and interests of all persons, not just of those in the majority.

From the above it is evident that, if a decision had to be made one way or another, this discussion leans towards acceptance of a deontologic model of research ethics in HMS. However, utilitarian concerns may contribute positively towards research outcomes and should not be neglected. Ideally, when evaluating research projects for ethical acceptability, both utilitarian and deontologic criteria should be applied. For example, the results should be important (utilitarian); the risk-benefit ratio should be favourable (utilitarian); voluntary informed consent should be obtained (deontologic); and considerations such as privacy, cultural factors, confidentiality, and deception. should set limits on the conduct of research (deontologic). As presented here, the utilitarian considerations could be viewed as necessary but not sufficient conditions for research to proceed. The absence of the deontologic concerns may however morally invalidate research that satisfies the utilitarian criteria. The practical implication of this suggestion is that in a codification of research ethics for HMS, priority ought to be assigned to principles based on duty, rights and obligations. This deontology-loaded approach is consistent with Zelaznik's (1993) contention that the use of humans in research is a privilege, and that the rights of research participants ought to outweigh the desire of researchers to conduct research.

JOURNAL SEARCH : REPORTING OF INFORMED CONSENT

The results discussed above constitute a limited review of ethical practices in HMS research. As such, they serve to reaffirm the necessity to examine some of those practices, such as adherence to procedures governing obtaining informed consent. One way to potentially gauge the extent to which a procedure is being followed or not, is to note whether it is reported. In this regard, 1 347 papers in 23 HMS journals and 3 conference proceedings were scrutinised to determine the incidence of reporting of the informed consent process. It is of course acknowledged that non-disclosure of a procedure does not necessarily imply that the process was omitted. Put differently, omission of disclosure then does not provide any indication of culpability. Disclosure on the other hand provides at least indirect evidence of compliance, and is thus seen as desirable in terms of adherence to an autonomy-based research ethics framework.

Before reporting the results, it is worth noting that in order to avoid unnecessary repetition, the implicit assumption is adopted that the principles presented and discussed earlier, specifically with regard to informed consent, apply to the journal search data. This includes, *inter alia*, considerations of autonomy, coercion, sanction, paternalism, harm, cultural considerations, confidentiality, privacy, and rights to withdraw from participation.

It is important to note that for each paper reviewed, the necessity for reporting was determined according to the criteria presented in Chapter III. Thus in each of 1 347 cases the paper was evaluated in the light of those criteria, and 703 (52.1%) were deemed to require informed consent. So, the values reported in Figure 17 reflect percentages for all those papers deemed to require a consent process, i.e. 52.1% of all papers scrutinised.

Figure 17 represents a summary of the raw data presented in Appendix 12. The journals were placed in disciplinary domains (as per Table VI earlier) according

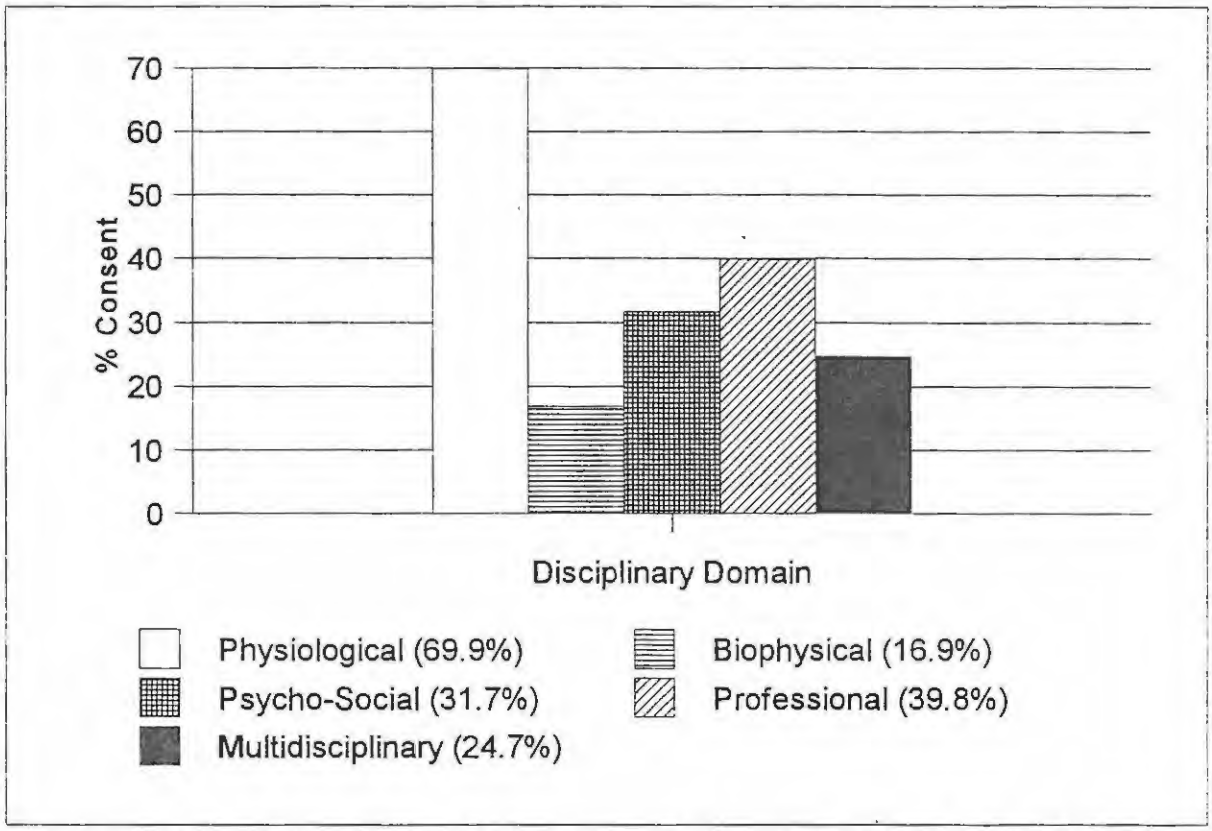

Figure 17: Informed consent reported in research journals (classified by disciplinary domain), expressed as a percentage of the total papers where obtaining consent was deemed appropriate (* significant at $p<0.001$).

to relationships between sub-disciplines, and Chi-square analysis revealed significant differences between observed and expected scores at $p<0.001$. The results bear some relation to Figure 5, wherein researchers in the physiological domain identified a greater percentage of ethical problems when reviewing research proposals. In this case, Figure 17 indicates that the category of journals including Exercise Science, Sports Medicine, Exercise Physiology, and Nutrition (physiological domain) evidenced a significantly higher incidence of reporting the informed consent process than the other categories. The above-mentioned category had a reporting percentage of 69.9%, with the remainder ranging from 16.9 - 39.8%. (Figure 17). It could of course be argued that the studies in these journals are of such a nature as to demand greater stringency than those in the other categories. However, it is worth bearing in mind that the percentages expressed in Figure 17 reflect percentage of reporting where consent was deemed necessary, in all categories. As such, the selection procedure relativised the process, enabling direct comparison between categories.

One of the reasons for the higher reporting rate in the first category mentioned is that 3 of the journals in the category required a consent statement as part of the text presented for publication. So, generally in the methodology section, researchers were obligated to state something like "Research participants provided voluntary, written informed consent and the project was approved by the ethics committee of the investigating institution." This requirement, and the resultant high percentage, is probably a response to the biomedical nature of the category - a situation where research ethics in HMS and allied disciplines has followed the example of medical research. It is interesting to note however, that of the 3 journals requiring a consent statement, not one had a 100% reporting rate, the lowest being 36.8% (Appendix 12). This points to laxity in editorial practice in respect of laid-down policy - further evidence of paying lip-service to research ethics practices in HMS and allied disciplines. To summarise the results, the journals representing those sub-disciplines with higher invasive potential tended to be commendably more rigorous in reporting the application of

informed consent and ethical review procedures than the potentially more benign sub-disciplines. Whilst this is at face-value an obvious conclusion, it is worth bearing in mind that the low incidence of reporting in the "benign" areas in fact applies to potentially invasive research. Thus, when relativised and evaluated, reporting rigour was lacking in several sub-domains of HMS.

It is of course acknowledged that non-reporting does not directly indicate that an informed consent process did not take place. Further such non-reporting can give no direct indication of the potential for abuse or harm to research participants. However, the low incidence of reporting in 5 of the 6 categories does raise questions about the omission of a commonly accepted research practice, and a simple statement regarding the procedure would serve to allay possible suspicions about research practices. It could be argued that, in journals, space considerations limit the reporting of complicated procedures, but a simple statement such as that presented earlier need not exceed 20 words. Not only does knowledge of a consent statement requirement potentially protect research participants, but it presumes a measure of responsibility and liability on the part of an investigator. Reporting of the consent process does of course not ensure that procedures were correctly applied, or even that they were applied at all, but again, it places the onus of responsibility on the researcher. This is in line with the view expressed elsewhere that conducting research ought to be viewed as a privilege, rather than as a right.

Whilst not presenting formal data other than the reporting of an informed consent process, the extensive reading of research papers confirmed, at the intuitive level, the critical conclusions drawn by the conceptual analysis begun in Chapter II. In broad and simplified terms, the journal search contributed to the growing conviction on the part of the author that a significant proportion of research in HMS requires consideration of ethical issues, but such consideration is either largely absent in practice, or lip-service is paid to deontologic issues, with utilitarian motives predominating. In light of the above, and given both the focus

of HMS research and the current pressure on researchers to publish, it would seem prudent to suggest that, where applicable, HMS journals revise their editorial policies. Explicit standards need to be constructed regarding the types of research that require consent procedures, and guidelines disseminated (at the very least in the respective journals) as to how to correctly apply those procedures. Finally, submitted papers should be carefully scrutinised to determine whether such procedures were necessary, and if so, were applied. Satisfactory assurance that acceptable ethical procedures were followed should be a submission requirement for publication.

QUESTIONNAIRES TO HEADS OF DEPARTMENTS

Professional experience and interaction with HMS colleagues worldwide, served to fuel a growing personal conviction on the part of the author that formal research ethics systems and educational programmes are perhaps viewed as a "necessary evil" by researchers. This complements the analysis in Chapter II, which concluded that there is some resistance to the bureaucracy associated with the rise to prominence of IRBs, and that insufficient attention is being paid to education in research ethics. Consequently, the questionnaires were designed to elicit basic information about ethical practices in two samples of HMS departments. In particular, the situation in South Africa (SA) was contrasted with a Comparison sample of selected USA and Australian departments (Comparison sample). One rationale for the latter combination was the low absolute number of Australian responses. Also, it has been contended (Malloy **et al.** 1994) that the Australian system, because of its relative youthfulness, has tended to consider developments in other countries where programmes are more firmly established (USA and Canada). As such, it is to some extent modelled on that of the USA, and this serves to identify a conceptual link between the two systems, in so doing justifying the formation of the Comparison sample.

Despite follow-up procedures, the questionnaires elicited a limited response,

Table XIII : Existence of a) procedural guidelines governing research involving human participants, b) and ethical review board requirements in HMS departments.

	South Africa (n-10)	Comparison sample (n-17)
a) Procedural guidelines	80% (8)	100% (17)
b) Ethics review boards	50% (5)	82.4% (14)

Table XIV: Graduate research proposals a) submitted, b) requiring modification.

	South Africa (n-10)	Comparison sample (n-17)
a) Proposals submitted	(137)	(496)
b) Requiring modification	32.9% (45)	38.7% (192)

Table XV : a) Existence of research ethics courses in HMS curricula, and classification of courses as b) autonomous, c) compulsory.

Classification of Course	South Africa (n-10)	Comparison sample (n-17)
a) Existence	80% (8)	58.8% (10)
b) Autonomous	0.00	41.2% (7)*
c) Compulsory	50% (5)	11.8% (2)

(* significant at $p<0.05$)

particularly with regard to the Comparison sample. While the SA response represented 76.9% of HMS departments in the country, the Comparison sample cannot be said to be representative, and given the nature of the questionnaire, may be biased towards rejecting null hypothesis 3. Nevertheless, the limited empirical data served to lend weight to the conviction arrived at through professional experience, namely that South African HMS departments are relatively deficient in terms of applying formal systems of research ethics. This conclusion is supported by the informed observation that a legislative culture of human rights has been historically present in the societies represented by the Comparison sample, and until recently, has been absent in South Africa. Put differently, the limited data presented support the contention that democratic political systems have resulted in more stringent legislation designed to protect individuals in research contexts. Evidence for this is provided in the conceptual analysis of Chapter II. In the USA for example, IRBs were created by law and, specific regulations govern their conduct. The concern with ethical research practices is in fact an ongoing one in the USA, as is evidenced by recent efforts to establish a single, independent body to oversee the protection of human subjects in research (Lehrman, 1997). In South Africa, the publication in 1979 of the MRC guidelines for ethics in medical research reflected a greater appreciation of the importance of ethics in medical research and clinical practice. Research in HMS in South Africa is however not governed by any central legislation, the only control being that which operates in terms of guidelines or regulations at individual institutions. Broad societal concern (as in the Comparison sample) with principles such as autonomy has thus translated into action in terms of requirements regarding adherence to formal ethical systems, with such comparable action being relatively deficient in HMS in South Africa.

Table XIII indicates that all of the Comparison sample departments are subject to procedural guidelines governing research involving human participants. This contrasts with the 80% reported for South African institutions. A related response concerned the existence of formal accountability towards ethical review boards.

Here the Comparison sample percentage decreased to 82% and South Africa to 50%. The general decrease here is probably due to a shift in emphasis in the questionnaire, with **guidelines** being less formal, or perhaps in-house, as opposed to **formal accountability**. In both cases however, Table XIII clearly indicates diminished accountability towards ethical "systems" for South African as opposed to Comparison sample HMS departments. Table XIV shows that a greater percentage of Comparison sample graduate research proposals required modification on ethical grounds than those submitted to South African departments. This seems logical when one considers the previously reported accountability, as less formalised systems will naturally lend themselves towards more flexibility in the review process.

At first glance (Table XV) the above trend is reversed when considering the existence of ethics courses in the curricula of the two cohorts, with a greater percentage of SA departments offering such courses. Further, a greater percentage of SA courses were compulsory components of the HMS degree. This apparent anomaly with the earlier results is however explained by the fact that while the SA courses are compulsory, they in fact constitute only small components of subsidiary courses that constitute the curriculum. That is, they are not autonomous courses, as 41% of the comparison sample courses are. In both systems, but clearly to a greater extent in South Africa, ethics teaching in HMS is included as a sub-component of other courses, such as Research Methods and Statistics. The results reported earlier for the research proposals cast some doubt as to whether this constitutes sufficient instruction in research ethics.

Table XVI refers to accountability towards procedural guidelines in specific cases or conditions. So, in terms of captive populations, 60% of SA as opposed to 88% of the comparison sample institutions are subject to regulations concerning the use of students as research participants. The difference is even more marked when children are to constitute the study population (60% SA as opposed to 100% for the Comparison Sample), the difference between expected and

Table XVI : Existence in HMS departments of procedural guidelines governing a) using students as research participants, b) using children as research participants, c) using animals as research participants, d) ethical issues in transcultural research, e) research methodology involving deception and concealment, f) scientific misconduct and fraud.

Research Context	South Africa (n-10)	Comparison sample (n-17)
a) Students	60% (6)	88.2% (15)
b) Children	60% (6)	100% (17)*
c) Animals	70% (7)	94.1% (16)
d) Transcultural	50% (5)	64.7% (11)
e) Deception	60% (6)	94.1% (16)
f) Misconduct	80% (8)	88.2% (15)
	67.14%	88.1%

(* significant at $p<0.02$)

observed responses being significant in this instance ($p<0.02$). Whilst not overtly germane to the overall focus of this study, the percentages concerning the use of animals in research support the trend of the comparison sample departments being more accountable in respect of research ethics regulations than their South African counterparts. Similarly, only 50% of South African universities are subject to procedural guidelines in respect of transcultural research, the respective Comparison sample percentage being 65%. This finding may be of particular importance, as cross-cultural research contact in multi-cultural South Africa is increasing as a direct result of the democratisation of the country's political and social systems. With regard to the Comparison sample, 94% compared to 60% of South African departments have explicit guidelines concerning research methodology involving deception and concealment. Similarly, a greater percentage of the comparison sample departments are accountable to guidelines and regulations governing scientific misconduct and fraud in research. While hampered by small response sets, Tables XVII and XVIII provide some indications as to the reasons for the paucity of autonomous ethics courses in HMS curricula, as well as the formal philosophy qualifications of HMS staff entrusted with teaching ethics. As expected, the primary reason for the absence of courses was that the teaching of ethics is a component of other courses in the degree (40% for South Africa, 54% for the USA, and 100% for Australia). This is supported by the percentages expressed in Table XV regarding the teaching of autonomous or component ethics courses. Other reasons include perceived lack of interest by students (SA = 30%) lack of interest by staff (SA = 30%), and lack of qualified staff (SA = 30%). The last two factors may of course be interrelated, and may even to some extent influence the lack of interest by students. Put differently, if staff are not enthusiastic about teaching ethics, then it is probable that students will not be enthusiastic about being instructed in it. The lack of interest by staff is probably influenced by the fact that only 2 South African staff members presenting ethics courses had formal philosophy qualifications.

Table XVII: Rationale for autonomous ethics courses being absent from HMS curricula.

	South Africa (n-10)	USA (n-13)	Australia (n-4)
Lack of interest by students	30% (3)	-	50% (2)
Lack of interest by staff	20% (2)	-	50% (2)
Lack of qualified staff	30% (3)	7.69% (1)	50% (2)
The teaching of ethics is a component of other courses in the degree	40% (4)	53.85% (7)	100 (4)
Other reasons	10% (1)	7.69% (1)	-

Table XVIII : Academic affiliation and formal Philosophy qualifications of members of staff presenting ethics courses in HMS departments.

	South Africa (n-8)	USA (n-9)	Australia (n-1)
HMS staff	100% (8)	88.89% (8)	-
HMS staff with formal Philosophy qualifications	25% (2)	11.11% (1)	-
Outside staff	-	33.33%	100% (1)

Discussion on Questionnaires to Heads of Departments

It is acknowledged that drawing conclusions and making generalisations from these data may be problematic. While the data represent 76.9% of South African heads of HMS departments, the small response for the Comparison sample may preclude comparison or extrapolation. However, while considerations of confidentiality prevent identification and disclosure, it should be noted that the Comparison sample respondents included prominent departments, responsible for producing seminal and substantial research output. As such, there is perhaps some claim for the validity of these results. Further, as with the other empirical data, these results complement the general conceptual analysis of research practices in HMS. The limited empirical data presented above may thus, bearing in mind the limitations, indicate that, generally speaking, HMS research in the population represented by the Comparison sample, is subject to more stringent ethical and methodological constraints than is the case in South Africa. This is probably primarily due to legal obligations, for in the USA any experimental subject who is exposed to possible harm (either physical, psychological, or social), must give consent prior to participation in research (Policy Statement, Medicine and Science in Sports and Exercise, 1996). In respect of HMS research, no such legal imperative exists in South Africa, with the implementation of ethical guidelines being left to individual institutions. In reality, the percentages presented in Table XIII for South Africa may be lower than reported, as the personal experience of the investigator conflicts with some of the responses.

Accountability towards procedural guidelines governing research involving human participants would include obtaining valid, voluntary informed consent. A further reason

for the observed discrepancies between the two cohorts could be the historical nature of the respective social systems represented by respondents. The USA and Australia have long been champions of individual rights. In the USA for example, ethical obligations to human research participants are not just

mechanical, in place because they are statutory requirements, but they have historical roots in respect for human rights (Goduka, 1990). From this has arisen the belief that the core of the ethical problem in ensuring a research participant's freedom of decision in any research context, is the individual's right to self-determination, which is expressed through providing informed consent. This is of course not the case in South Africa, where prior to the democratisation of the political system, social and regulatory structures were traditionally rooted in authoritarianism.

With regard to formal accountability towards ethical review boards, only 50% of the South African departments are subject to the constraints of such a system. In contrast, in the USA, IRBs were created by law and specific federal regulations govern their conduct. For example, in the USA the composition of IRBs and the requirements for assurance of compliance to legal DHEW procedures is specified. On behalf of the institution, the IRB gives assurances to DHEW, meaning that the IRB is responsible for all institutional research in which humans are used (Liemohn, 1979). HMS research in South Africa is not governed by any such legislation, other than that which may operate voluntarily at individual institutions. The MRC in South Africa however maintains that such committees are of crucial importance in regulating research and preventing abuses, since investigators should not be the sole judges of whether their research conforms with generally accepted ethical codes and practices. Given the responses to ethically problematic research proposals presented earlier, it seems that the respondent sample of researchers in HMS are not even competent in evaluating the ethical acceptability of other researchers' proposals. This supports the contention of Brodie and Stopani (1990), who hold that IRBs function to dispel delusions on the part of researchers that they can adopt the attitude of an ideal ethical observer. This implies that no investigator can be totally objective in the sense of being free from personal influences and conceptual affinity with a project, and that the distancing and isolation of an IRB, coupled with a wide range of membership, serves to improve the objectivity of ethical decision making.

This is contrary to the argument advanced in some detail in Chapter II, that increased accountability towards the bureaucracy of IRBs, and the restrictions on research that have resulted, have served to inhibit research and may have a negative impact on adherence to ethical guidelines. Several authors (Gray, 1975; Kabat, 1975; Price, 1978; Mosher, 1988; Pettit, 1992; Rosnow, 1993; and Emanuel, in MacIwain, 1996) have criticised the machinations, bureaucracy and restrictive nature of IRBs. Criticisms include variability in standards invoked, inconsistencies in decision making, and haphazard practices. Pettit (1992) in particular contends that the oppressive outside legislation represented by IRBs will cut down on both the quantity and quality of research. Put differently, critics of the IRB system contend that it is in fact impeding legitimate research activity. By demoralising researchers through an escalating regulatory bureaucracy, they feel that there will be a reduction in the commitment of researchers to the ethic which currently prevails.

The debate is far from over, and the US National Bioethics Advisory Committee has recently been charged with examining the possibility of setting up a single, independent body to oversee the protection of human subjects in research (Lehrman, 1997). The rationale behind this initiative is that there has always been an inherent conflict within agencies that monitor their own research. The independent body proposed by the bioethics committee would monitor problems in research on humans, and would be able to demand compliance by government bodies.

So, there are vigorous arguments for and against regulation. Which should hold sway? Pettit (1992) feels strongly that there is no regulation like self-regulation. As noted earlier, self-regulation is a necessary condition for the effective functioning of research ethics, but unfortunately not a sufficient one. History has shown that researchers have exhibited a pervasive inability to regulate themselves, and this is strongly supported by the results of this study presented earlier. Self-regulation then does not suffice, and researchers should be held

accountable, not only to their colleagues, but to all who may be placed at risk (Bok, 1978). IRBs may in fact stifle creativity and at times shackle the research process, and there are problems with the function and composition of IRBs. Nevertheless, this study argues that, while these committees may need to be reshaped and their functions assessed, the benefits of the process far outweigh the disadvantages.

Earlier it was stated that a substantial body of research in HMS and allied disciplines is benign in nature, posing little or no risk to participants. Should such research be subject to the bureaucratic, sometimes convoluted procedures and paperwork entailed by IRB approval? According to DHEW regulations, protocols of low risk are actually excluded from the necessity of undergoing full IRB review if they do not violate one of three basic criteria, namely a) anonymity, b) absence of civil or criminal liability, and c) sensitive aspects of behaviour. So for example, a study attempting to assess health-risk factors through confidential, non-invasive techniques, might be exempt from review. Zelaznik (1993) however contends that, particularly in the current ethical climate, investigators have little to gain from such exemption. The only advantage would be the removal of the burden of the administrative process, which can be time-consuming. On the other hand, not having approval could have serious consequences in the event of injury or legal proceedings against the investigator. In such cases, the parent institution would not be bound to support the investigator. Further, researchers stand to benefit from the IRB procedure, in that they receive objective evaluation and guidance in the ethical, technical and methodological aspects of a proposed project. This supports the view of Brodie and Stopani (1991), who feel that the disadvantages of IRBs are negligible when evaluated in the light of the benefits of careful planning, close adherence to the scientific ethic, and maximum subject protection. The issue of "captive" populations has important implications for research in HMS, where participants are often recruited in institutional or relatively formal settings, e.g. students, or research participants. Table XVI indicates that only 60% of South African HMS departments are subject to guidelines governing the use of students

as research participants, as opposed to 88% of the departments in the comparison sample. The improper use of such populations obviously violates the principle of autonomy, and it is contended that the issue becomes one of how free subjects are, rather than just how informed they are (Olivier, 1996). In these scenarios it is necessary to consider whether the autonomous choice of subjects is valued intrinsically rather than extrinsically.

For research to proceed it is of course necessary to have access to a pool of potential participants, and such access is much easier in institutional settings. From an ethical perspective, the danger is that coercion or sanction may be applied to ensure participation, or those involved may either perceive an element of coercion in participation, or an element of sanction attached to non-participation. The following actual case serves as a graphic illustration of the above point. HMS Lecturer A, a friend of Graduate student B, was approached by the latter to recruit members of a second-year HMS class to act as volunteers for a research project. The two were friends on a social level outside the Department, and A had no hesitation in assisting B, whose compulsory project was behind schedule. The first stage of the protocol required participation in a 20 MST run (Brewer et al. 1988; Davies and Scott, 1997). The time designated for the test was 14h00, with environmental conditions of 41° C and 88% relative humidity. (Note: these environmental conditions were measured by another lecturer and used as justification to prevent commencement of the test). Participants were recruited in the following way: the lecturer and graduate student approached the class in a normal lecture period, and asked them to "volunteer". If they participated, their performance in the 20 MST would be graded (the nature of grading was unspecified), and they would receive a participation credit towards semester marks. Further, they were assured that they would be exempt from a semester test, which all non-participants would have to write.

The above seems like an elaborately constructed fictional case designed to illustrate potential abuses when using students and research participants. The

situation as described however actually happened in one of the 40% of South African institutions that reported not having guidelines governing such situations. Fortunately, two other lecturers were informed of the measures adopted by A and B, and recruitment and testing did not proceed. Unfortunately, the lack of guidelines meant that the matter was not taken further. Coercion, sanction, and abuse of a power position are so obvious in this case that they scarcely warrant further comment.

An obvious solution to the flagrant abuses mentioned above would be for HMS departments to institute guidelines prohibiting recruitment from classes where an investigator has some involvement, e.g. lecturing. An alternative would be for recruitment guidelines to ensure that students don't perceive that volunteering may improve their grades, or conversely that not volunteering may be to their disadvantage. It is important that consent is not obtained under duress, and it is important that it is clearly communicated that a student's decision re: participation will have no effect on grades.

On the other hand, participation in a research project can have important educational benefits for students, and opponents of the guidelines suggested above would argue that besides inhibiting research, over-regulation denies educational opportunities to students. On the other hand, the careful application of the suggested guidelines should not result in mass non-participation. On the contrary, active and enthusiastic participation is more likely in non-coercive settings. This can have an important impact in behavioural studies in terms of validity of results. In short, recruitment through properly structured procedures ought not to affect participation rates. In fact, adherence to guidelines perceived by all to be equitable and just would in all likelihood not negatively affect participation, and could possibly contribute positively to the validity of results.

The results presented earlier indicate a similar pattern concerning the use of children as research participants. This is a sensitive area, and it is recommended

that the child's assent and a parent's consent be obtained prior to participation in a project. Also, researchers should not resort to parental or peer pressure or offer special incentives just to overcome a child's reluctance to participate.

Further, Brodie and Stopani (1990) state that in addition to the above, a project should go ahead only if the work will be of benefit to children, if a full risk-benefit assessment has been done, and if the work cannot be undertaken utilising a less vulnerable population group. Children should only be included in research if they do not object or appear to object in either words or action, and where there are cultural considerations, these should be respected (MRC, 1993). Given that much research in HMS and allied disciplines utilises children as participants, and that a substantial body of that research has beneficent intentions, it is desirable that it continues. However, for similar reasons outlined in the section on coercion, sanction, and "captive" populations, it should be regulated by carefully formulated guidelines. If moral convictions are not enough to persuade researchers to apply such ethical practices, then perhaps a self-serving motive could be considered. In this regard it is worth noting that societies are most outraged when vulnerable populations are subject to abuse. Put differently, unless research on children is carefully regulated and controlled, science and society will be on a collision course, with future research likely to be the loser.

Of particular importance in the current situation, only 50% of South African universities reported accountability to guidelines governing ethical issues in transcultural research. Given the cultural diversity of South Africa and the democratisation of society, the trend in research will be towards more cross-cultural contact, leading towards potential problems as divergent social and ethical systems meet. Ethical rules are intended to govern desirable conduct, and are often based on the religious or philosophical beliefs of a given set of people. Therefore, research ethics might, *a priori*, be expected to vary cross-culturally, and ethical conflict is most likely to emerge in situations where the researcher and participant come from different cultural backgrounds.

Obtaining informed consent in transcultural contexts may thus pose special problems for investigators. For example, a practical issue may be the translation of an informed consent form and other documents relevant to the research process, e.g. questionnaires. Given the multi-ethnic nature of South African society, information may need to be presented in several languages, with the translation process being carefully triangulated. Further, the situation may call for the facility of verbal explanation in the dominant language. In urban centres researchers will often find that English is the language of choice, but the situation will change markedly if research is conducted in peri-urban or rural settings. Also, it is this investigator's experience that special efforts may be necessary when informing rural potential participants about, for example, the nature of a study. Such a population has little experience of research, and may view the practices involved, and claims of potential utility, with suspicion.

Bok (1978) states that when Western notions of research are transplanted to different cultural contexts, the risks may be differently understood and assessed on all sides. Practically, those who run the greatest risks may know the least about them (or the potential benefits, for that matter), or have insufficient power to impose regulation of any kind on the investigators. Also, Western societies stress the individualistic nature of a person, placing much emphasis on individual rights, autonomy, self-determination, and privacy (Christakis, 1992). This is at variance with the more relational definitions of a person found in community-oriented African societies. Here the challenge for researchers centres on the necessity and validity of extrapolating Western ethical guidelines to a different cultural setting (Ijsellmuiden and Faden, 1992).

Having earlier (Chapter II) rejected a relativist approach to research ethics, this study explicitly holds that basic ethical principles exist, with derived systems leading to general judgements that serve to prescribe and justify our actions. Given the results of this study, this viewpoint leads to the recommendation that South African HMS departments develop explicit guidelines regarding ethical

issues in research in transcultural contexts.

The social and cultural environment of potential participants should be taken into consideration when planning research, and in African contexts in particular, research programmes should treat people as part of a community while simultaneously respecting their individual autonomy (MRC, 1993). This has been supported by Olivier (1995), who holds that if we evince respect for a person's autonomy, and do this in conjunction with a consideration of relevant cultural factors, then we reduce the likelihood of violating either the person's rights or the society's values. On the other hand, if in transcultural settings we ignore either form of consent, we may run into ethical conflict.

Practically, the above view may entail that consent is obtained from research participants as well as from tribal leaders or relevant officials, for example. Consent from the latter parties alone, is not, in the opinion of this writer, a valid substitute for consent from individuals. This is not to suggest that potentially valuable research should be retarded by issues such as lack of education, or illiteracy. Rather, it means that in cases where cultural differences exist, researchers ought to make an extra effort to communicate effectively with participants, particularly with regard to issues such as obtaining informed consent.

This supports the view of Ijsellmuiden and Faden (1992) who contend that African societies are changing in ways that make informed consent requirements more - rather than less - appropriate. A singularly community-based approach, e.g. blanket consent received from a tribal leader, is not only paternalistic, but possibly exaggerates the comprehension required to have an adequate understanding of the implications of research participation.

To conclude, given the changing face of research in this country, South African HMS departments are deficient in terms of guidelines governing research in transcultural contexts. It may be that cross-cultural dialogue is difficult to achieve,

but that does not mean that the effort should be abandoned. Cultural differences do not necessarily constitute insurmountable barriers. Research and society are interrelated, and merely paying lip-service to the value of autonomy in research contexts constitutes a thinly-veiled return to past social practices.

Table XV illustrates that 50% of the ethics sub-courses taught in South African HMS departments are compulsory, and that no department offers ethics as an autonomous unit. Table XVII indicates the reasons offered for the paucity of ethics, and it is unsurprising that the primary reason was that the teaching of ethics is a component of other courses in the degree. (Note that despite the paucity of responses for the comparison sample, the South African cohort constitutes 76.9% of departments in the country. Comparison is thus problematic, but comment can be made about trends in South Africa). The results are similar to those obtained by Malloy (1992) and Malloy **et al**. (1994), with other reasons being lack of interest by staff and students, as well as lack of qualified staff.

These results seem to indicate that ethics courses may have, generally speaking, been relegated in importance in favour of functionalist courses. This supports the Malloy **et al**. (1994) contention that conceptual courses such as ethics have been accorded secondary status in HMS curricula, with the current teaching level of the subject being viewed as sufficient. Given the results presented earlier, considerable doubt must be cast as to the efficacy of this approach.

What are the implications of the perceived devaluation of ethics courses? This thesis holds that only a sound and persistent educational effort will bring about real changes in research practices involving humans. This supports Malloy (1992) who states that one's ability to reason through moral dilemmas is determined by one's cognitive moral ability, which is developed by being exposed to ethical concepts and principles. Systematic education is critical, with the role of the curriculum being to combat ignorance and poor decision-making. This need for education in research ethics is the collective conclusion of several

authors (Friedman, 1988; Goduka, 1990; Annas, 1991; Pettit, 1992; and Wright, 1994) who highlight various areas of concern, including consideration of cultural factors (Goduka, 1992), the development of explicit research standards (Wright, 1994), supervised research ethics training programmes, and a limit on the size of laboratories to ensure adequate supervision (Friedman, 1988).

Table XVIII shows that in the vast majority of departments, research ethics is taught by resident HMS staff. This is unsurprising, particularly given the "sub-course" nature of the subject in HMS departments. A very small percentage of the staff teaching ethics were in the possession of formal philosophy qualifications. It is worth noting that while such qualifications may on the surface be desirable, they in no way guarantee familiarity with the subject matter. The content of philosophy curricula in tertiary education varies widely from institution to institution, and consequently so does the emphasis placed on various branches of the discipline. Put rather bluntly, you might as well have a physiologist as a person qualified in formal logic teaching ethics. Neither may have the necessary grounding in research ethics to do justice to the course, and at least the physiologist will have some experience in research contexts.

What are the implications of this? Firstly, outside staff could be employed/seconded to teach ethics modules. This is contrary to Pettit's (1992) suggestion that students should be educated in research ethics by experts in their particular discipline, rather than by outsiders. This may be desirable, but it is then necessary that those "experts" be exposed to some sort of formal, prior training themselves. This is reinforced by the results presented earlier, which indicate that the "experts" themselves appear to be in dire need of ethical training. An alternative would be to provide philosophers with an overview of HMS research and to utilise them in the teaching of research ethics. The rationale for this is as follows. The focus of a research ethics course should be the application of justified ethical theories to research practices in HMS. It would seem to be much easier and less time-consuming to provide philosophers with an overview of HMS

research practices than it would be to formally introduce HMS professionals to the ethical theory needed to effectively teach ethics courses.

On the other hand, this amounts to proposed regulation from outside, which may cause resentment and non-adherence to the prevailing research ethic. Pettit (1992) acknowledges that philosophers might play a part in this educative process, but feels that specific disciplines should maintain their involvement. In this manner, students will be exposed to the sorts of cases they are likely to encounter as professionals. Further, they will be made aware of what, by current professional consensus, is considered to be acceptable behaviour. In concurring with this approach, Gifford (1994) feels that an ideal relationship would involve scientists being assisted by others in constructing the necessary educational materials. A further possibility, particularly at undergraduate level, would be to develop a generalised course on research ethics, available to students in all departments. Advantages here would be rationalisation of staff resources, or even just the assurance that the course is taught by adequately qualified persons. Also, such a course would provide students with a broad, cross-discipline outline of research, and hopefully illustrate the point that ethics is a fundamental and necessary part of the research process.

All the above indicates a need for comprehensive, instructional research ethics text for HMS curricula. Further, the results and discussion of this research exposed a need to develop a specific, relevant method of teaching research ethics to HMS students. Given the above necessity, and arising directly from the analysis conducted in this thesis, the author developed a research ethics course for final-year and graduate students in the HMS Department at the University of Zululand, as presented below.

IMPLICATIONS AND PRACTICAL APPLICATIONS: TEACHING RESEARCH ETHICS

It is useful to consider current theories of learning and teaching when designing a course to teach something as abstract and conceptually demanding as ethics. Schema theory, largely developed in the field of reading but applicable to any learning activity, states that meaning is constructed through the interaction of new information and the existing background knowledge of the individual (Carrell et al. 1988). The emphasis moves from the encoded information alone to the interaction between the encoded information and the individual trying to make sense of that information. Meaning is constructed through the interaction between the text (either written or spoken) and the background knowledge of the individual. Schema theorists argue that the text is interpreted by mapping the input from the text against some existing schemata. For the input to be understood, all aspects of the schema must be compatible with the new input that is being received.

What are the implications of this for the ethics units of HMS courses? Firstly, students come to the course with existing knowledge, and the course needs to start at this level. It could, however, be misleading to make assumptions about existing levels of knowledge, so some time should be devoted to assessment. If incorrect assumptions are made, schema theory suggests that students would find it very difficult to understand the course because the new input will not be compatible with what they already know.

Once the initial assessment has been made, the general aim is to advance the students' knowledge of ethics and the application of ethical principles to research contexts. Vygotsky (1978) has an illuminating understanding of the role of the task in learning activities. He would present subjects with a task that was too difficult to complete using existing knowledge. He would then provide (as the teacher or 'mediator') support for the learners by way of new stimuli which would enable the learners to complete the task. According to him, learning takes place

by integrating the old knowledge with the mediated knowledge to complete the task, with the mediated knowledge being central to the whole learning process. In other words, the task facilitates the acquisition of new knowledge and skills rather than merely being a test of existing knowledge and skills. If one were to implement this understanding of the nature of a task in a university environment, one can see how important it would be to have a well designed task with clear objectives, and to ensure that students understood what they were expected to do to successfully complete the task. Of vital importance, if the task is to be a learning experience for the students rather than simply a test of existing knowledge, is the involvement and availability of the lecturer as mediator throughout the process of completing the task (Moll, 1990).

Vygotsky (1978) makes an important distinction between development and learning. He also distinguishes between an individual's *actual* and *potential* developmental level. The difference between these two levels is called the zone of proximal development. Underlying this theoretical construct is the belief that the level of actual development determines what type of task an individual is able to complete unassisted. The level of potential development, on the other hand, determines what type of task an individual can perform, initially in collaboration with another person. As individuals complete the task collaboratively, they will begin internalizing the knowledge and skills needed to complete the task independently. Potential development then becomes actual development through the zone of proximal development. It is important to note here, however, that if the task is too demanding for the individual in terms the actual level of development, the learner will not internalize the processes necessary to complete the task independently. The learning task must, therefore, be *proximal* to the individual's actual developmental level (Hedegaard, 1990).

Until an individual achieves control over a new function or conceptual system, the lecturer performs the function of 'scaffolding' the learning task to facilitate the learner's internalization of the new knowledge (Foley, 1991). This supports

Polanyi (1964) who argues that it is important to serve an apprenticeship in acquiring a skill or an art. By this he means that it is better to learn by doing *with* an expert than by studying or reading abstract principles (Lunsford,1979). Langer and Applebee (1987) propose a view of instruction based on the work of Vygotsky and Bruner. This view holds that tasks, rather than being used primarily to test and assess a student's learning, should provide an opportunity for the student to internalize new information and new strategies in a supportive or *scaffolded* environment. Once this new knowledge and skill has been internalized, the student will be able to complete a similar task independently.

Malloy **et al.** (1994) state that courses should incorporate the practical through the use of case studies, debates, and current issues from newspapers, magazines, or personal histories. Supporting this practical, contextual approach, Gifford (1994) makes the recommendation that issues of scientific misconduct be made a central part of scientific training, as he suggests (1994), perhaps integrated with discussion of scientific method. He presents an instructional programme in ethical issues, with the overall plan consisting of a series of modules, each focusing on a particular topic. Students are supplied with relevant reading material (case study, policy statements, and a set of discussion questions), and then meet with the course presenter to discuss the issues. He feels that it is important that students not only discuss seminal cases in research ethics, but that they are also sensitised to more common, less dramatic issues that they will encounter in their everyday lives. Beauchamp (1984) strongly advocates the case-study method, contending that it is a sound pedagogical technique with a distinguished history. Studying specific cases will assist students in real-life, rather than hypothetical circumstances. Further, case studies are most effective when they are used to draw out broader ethical principles and moral rules, focusing attention on the common elements in a variety of cases, and to the implicit problems of ethical theory to which they may point (Beauchamp, 1984). Case studies can employ the Socratic method of eliciting reflection, insight, and both theoretical and practical judgement. The Socratic method

proceeds from professed ignorance to questions that eventuate in proposed principles or universal definitions. These are tested by hypotheses and modified into ethical theory.

Rosnow (1990) advocates role-play as a method of teaching professional ethics. Prior to any role-play exercise, his classes are provided with relevant reading material, including case studies and ethical codes, in this case the American Psychological Association's ethical recommendations. Following this, students are required to peruse current journals with the purpose of finding any article that may have violated one or more of the principles of the ethical construct presented, and to write a brief report on this. Oral reports and detailed discussion in class follow, and students then role-play the author of the study to defend criticisms. This serves the important purpose of offering an alternative perspective, and sensitising students to the view that there is more than one vantage point from which the ethical evaluation of a study can be made. Finally, the studies are evaluated on their ethical cost and theoretical or practical utility through a scoring procedure devised and described by Rosnow (1990). Scoring matrices are developed to illustrate the way that most Institutional Review Boards (IRBs) seemingly operate. The teaching methods outlined below draws from the above recommendations and methods, and from personal experience and experimentation in teaching.

At the University of Zululand, HMS third year level students are required to complete a basic empirical research project under close supervision of a staff member. To paraphrase Polanyi (in Lunsford, 1979) the student is serving an apprenticeship under the guidance of a more experienced researcher. Students define a problem, conduct a literature review, collect relevant data, apply necessary computational/statistical techniques, and analyze and present the results. Possible problems are identified by staff during this process. Staff supervision/guidance is stressed, as students have little practical experience in research contexts, and the student/staff ratio does not exceed 2:1. This gives

students the opportunity to apply the theoretical knowledge they have acquired in a real life situation. The students are able to internalise this theoretical knowledge through application. This then serves as the preliminary background knowledge for the teaching of research ethics during the Honours year.

In the Honours year, a comprehensive compulsory course in Research Methodology commences in the first semester. This serves to build on the practical knowledge acquired earlier and to expose students to more sophisticated research methods, in preparation for their research projects. A concurrent compulsory Philosophy course introduces students to analytic philosophy before focusing in some detail on ethical theory. Course content includes an introduction to Ethics and Applied Ethics (concentrating on deontological and teleological ethical theories), competing philosophies on the value of research, the history of abuse in human experimentation, informed consent and the principles underlying it, ethical relativism, transcultural considerations in research, and the Institutional Review process.

As part of the process of sensitising students to moral decisionmaking in research contexts, students are provided with readings concerning seminal cases, eg the Jewish Chronic Disease Hospital study, Willowbrook State School Study, Milgram's experiments, and Zimbardo's research. Discussions are then personalised, with students placed in role-play situations, either criticising or justifying the research according to competing, or complementary facets of ethical theories.

A further part of the process involves a critical literature search for students. For example, a student will select a current volume of a refereed HMS journal and scan the articles for potential ethical irregularities. Students take to this task with enthusiasm, and some of the commonly identified problem areas include lack of informed consent, coercion or the improper use of a 'captive' population, possibility of harm to participants, lack of consideration of cultural factors,

paternalism, no medical screening, and violations of confidentiality and privacy.

This is followed by individual (student to lecturer) and then group evaluation of the ethical issues raised by the students' Honours research projects.

Ethical theories and principles are thus not introduced in an abstract, impersonal, or purely academic manner. The principles are integrated with previously acquired background knowledge, theoretical interpretations, seminal cases, and current professional practices. As such the process is interactive, being theory- and practice-driven, combining reflection and application in a way that is meaningful to students who may reject a more abstract approach.

This study contends that the morality of how we, as researchers, treat other people is too important to be left to chance. Gifford (1994) states that the crucial element in addressing problems of scientific misconduct involves the education of scientists, rather than mechanisms of sanction after the fact. Malloy (1992) states that the role of ethics curricula is to combat ignorance, and that without exposure to ethical theories students will remain ethically in the dark. Gifford (1994) concurs, stating that the most important goal is to raise consciousness of the issues involved, encouraging young researchers to take certain questions seriously, and generate discussion about them. Further, education will effectively communicate information about acceptable professional standards. Given that HMS programmes have become specialised in professional preparation, perhaps to the detriment of ethical conduct, ethics courses may provide the means to enable aspirant professionals in the field with the means to discover their own ethical consciousness (Malloy **et al.** 1994). Teaching methods utilised to accomplish this should be designed on the premise that meaning is constructed through the interaction of new information and the existing background knowledge of the individual, and courses should be structured accordingly. In the research ethics course generated by this study, ethical principles are integrated with previously acquired knowledge, theoretical interpretations, seminal cases and

current professional processes. The process is based on mediation and interaction, with the aim of giving meaning to abstract concepts. In conclusion,

> "we ought not to accept moral complacency in our organisations. One step towards idiographic and nomothetic 'right' conduct is to provide for these developmental opportunities in our curriculum" (Malloy, 1992).

CHAPTER V

SYNTHESIS, CONCLUSIONS, AND RECOMMENDATIONS

INTRODUCTION

Whilst society generally continues to encourage a progress imperative view of science, and welcomes the medical and technological advances provided by research, human experimentation in particular has at times resulted in conflict between science and society. In the quest to further our knowledge of the human body, and to exert some degree of control over its functions and performance, researchers have increasingly applied manipulative, and at times, invasive procedures. There is of course no dispute as to the unqualified good produced by much biomedical research of the above nature. Research, by definition, must search for the unknown, and consequently cannot be wholly benign. Nevertheless, acceptance of the value of research should not blind us to either past abuses in human experimentation, or more importantly, to the potential for future exploitation. The issues pertaining to violation of the rights of research participants are far from resolved, and are constantly changing in response to both new technologies and varying challenges posed by disease. Undoubtedly, ethical issues in genetic engineering and new cloning techniques will cause issues past to pale into insignificance in the foreseeable future.

Whilst not as overtly dramatic as the above, research in HMS is subject to pressures of the same genre. The unceasing demand for improvement in human performance, both at elite sport and everyday participation levels, has thrust areas of research such as Sports Science into the relative limelight. As in other academic disciplines, HMS practitioners are subject to institutional pressures to conduct research, publish their findings, and attract funding for their laboratories. Unlike most other disciplines offered at tertiary level, HMS staff and students are encouraged and required to conduct investigations utilising human participants.

The continuum of risk in these experiments ranges from almost completely benign to potentially life-threatening. Recognition of the above pressures, institutional needs, and increasing societal concern with issues such as autonomy, indicates a need to evaluate the extent to which ethical issues are considered in HMS research.

This is a macro-problem, in the sense that it requires consideration of broad areas of inquiry (ethics), as well as investigation into related and more defined areas (for example, the functioning of IRBs). Put differently, this study assumed an inverted pyramidical structure, with issues such as different ethical theories, autonomy, informed consent, Institutional Review Boards, issues in transcultural research, and the importance of education, being subsumed under the broad aegis of ethics at the top of the structure.

Normative ethics poses the basic question "What ought I to do?" When applied to specific contexts such as research in HMS, the question faced by an investigator becomes "What ought I to do in this particular situation?" To satisfy the logical criterion of consistency, the judgement arrived at must be justified, and this can be achieved by appealing to ethical theory. It follows then that our particular judgements, and their consequences, depend at least in part on the actor's adherence to a line of reasoning embraced by a specific ethical theory.

Most professional codes of ethics have traditionally followed a rule-based, deontologic approach which stresses rights, duties, and obligations. Several commentators however contend that, particularly in health care and research contexts, utilitarian or consequence-based theories hold sway. This indicates that there may be disparity between theory and practice, with professionals perhaps elevating the importance of results over considerations such as respect for persons, beneficence, and justice.

All of the above, plus, *inter alia*, perceived inconsistencies in the application of

informed consent procedures, the regular use of "captive" populations in HMS research, a perceived growing resistance to increasing IRB regulation, the generally perceived inadequate education regarding research ethics, and the personal experience of the author, indicated a need to evaluate current research practices in HMS.

Given the nature of the discipline, an attempt was made to approach the problem from a holistic perspective. The primary method consisted of the standard techniques employed by analytic philosophy, namely criticism, clarification, reasoning, judging, analysing, evaluating, and synthesising. This dictated the need for a thorough and critical analysis of relevant literature, with this review assuming more importance than would normally be the case for purely empirical research. Empirical data were obtained, but it was contended that such analysis alone would not be sufficient to adequately address the problem. Following general analysis, the study proceeded within the broad framework of an autonomy-based ethical theory justified by deontologic considerations. Utilitarian, beneficence, and virtue theories were not explicitly rejected, but it is worth noting that whilst accepting a progress-based view of science, the study followed the contention that the rights of research participants ought to outweigh the desires of researchers to conduct research.

METHODS AND PROCEDURES

The broad methodological framework involved criticism and clarification of ethical concepts, codes and practices in HMS and its allied- and sub-disciplines. Acknowledging the multi-faceted nature of the problem, the supplementary empirical data collection employed three distinct methods.

The first involved the distribution of 5 specifically constructed, ethically problematic research proposals to HMS researchers. The proposals consisted of published works which had been altered to make them ethically unacceptable

according to the standards applied by ethics committees. They encompassed 9 allied/sub-disciplines of HMS, and violated several commonly accepted research ethics practices. Researchers were requested to review the paper(s) as if they were to supervise the work. This section of the data collection thus involved deception, such deception being justified primarily on two grounds, namely that there was no possibility of harm to participants, and that disclosure would severely and negatively compromise the validity of the responses.

The second empirical contribution consisted of a comprehensive journal search of HMS- and related-journals. The aims were to assess the incidence of reporting of the informed consent process; and to garner information about current research practices in the discipline. With regard to the first aim, it is of course acknowledged that non-reporting of a procedure does not necessarily provide direct evidence of its omission in practice. Nevertheless, the burden of the ethical process lies with the researcher and reporting removes doubt, and further places a desirable measure of responsibility on the investigator/s.

The third empirical procedure involved a survey of South African, and selected USA and Australian, heads of HMS departments. The questionnaire was designed to assess, *inter alia*, formal accountability to regulations and guidelines pertaining to research ethics issues, and to evaluate the existence and efficacy of efforts towards education in research ethics.

In terms of interpretation of the data, primary importance was accorded to presentation in raw and percentage form. Statistical procedures were applied in respect of Chi-square computation, but the limitations of these treatments, as specifically applied to these data, were acknowledged in the design of the study. The strength of the study thus resided in the conceptual analysis, with the empirical data complementing the arguments and conclusions arrived at.

FINDINGS AND ANALYSIS

A total of 78 HMS professionals from 15 countries reviewed the research proposals. In the 5 years preceding this study, they had supervised 632 postgraduate theses ($\bar{x}$ 8.1) and published 801 refereed journal articles ($\bar{x}$ 10.3). This gives some indication that respondents were senior and experienced researchers in the field. In terms of sub-disciplinary expertise, the response sample embodied a wide variety of sub-discipline specialisation, such distribution serving not only to illustrate the holistic nature of HMS, but also contributing to a more representative assessment of research practices in the discipline. The research proposals presented for review potentially violated several commonly accepted research ethics principles, *inter alia* the informed consent procedure, necessity for medical screening, signing of release forms/waivers, coercion, sanction, paternalism, the possibility of harm to research participants, non-consideration of cultural issues, confidentiality, privacy, unjustified deception, and the desirability of debriefing.

In terms of the review process, the primary area of concern for respondents related to methodology, which elicited 25.8% of comments. This was followed by statistics (21.6%), conceptual issues (21.1%), and shortcomings in the relevant literature review (19.5%). This represents a relatively even spread of responses, in marked contrast to ethical comments, which comprised a mere 8.4% of the total, this despite the fact that the construction of the proposals should theoretically have predisposed towards a majority of such responses. So, despite the deliberate insertion of several sensitive moral problems into the proposals, only 1.8% of comments received from HMS professionals listed ethical concerns as sufficient grounds for rejection.

The journal search involved reading 1347 papers in 23 HMS journals and 3 conference proceedings. A total of 703 (52.1%) were deemed to require the application of an informed consent process. Following categorisation of journals

into sub-disciplinary domains, analysis revealed the following reporting incidence: Physiological (69.9%), Biophysical (16.9%), Psycho-Social (31.7%), Professional (39.8%), and Multidisciplinary (24.7%). Even where a specific journal required a consent statement as a condition of publication, compliance was not total, indicating some laxity in editorial practice with respect to explicit policy. Whilst not presenting formal data other than the incidence of reporting of the informed consent process, the extensive journal reading confirmed, at least at the intuitive level, the critical conclusions of the prior literature review. In broad and simplified terms, it provided some indication to this author that a significant proportion of research in HMS requires consideration of ethical issues, but that such consideration may be largely absent in practice.

Despite follow-up procedures, the questionnaires to heads of departments resulted in a limited return. The South African sample constituted 76.9% of HMS departments in the country, from which valid conclusions can perhaps be drawn, but the Comparison sample cannot be considered to be representative. Nevertheless, given the prominence of some of the Comparison sample respondents, plus consideration of social and political factors historically present in those countries, as well as the conclusions reached by conceptual analysis of the literature, some firm conclusions may be drawn even if extrapolation is not valid. Generally speaking, despite the limitations of applying statistics to these data, South African HMS departments were found to be deficient in terms of the application of ethical guidelines in research contexts. Specifically, the responses indicated diminished accountability in the following research areas: procedural guidelines governing research ethics; utilising students, children, and animals as research participants; cultural considerations; deceptive methodology; and scientific misconduct. Generally speaking then, and bearing in mind the limitations of the data, it could be contended that the population represented by the Comparison sample is subject to more stringent ethical and methodological constraints than is the case for South African HMS departments. This is primarily due to legal obligations, as well as the fact that such legislation is historically

rooted in concern for human rights. A supplementary product of the responses from Heads of Departments was an indication of the devaluation of the importance of ethics courses in HMS curricula. Given the results obtained from responses to the research proposals and the journal search, this is cause for some concern.

IMPLICATIONS

Generally speaking, utilitarian ethical theory holds that the ethically defensible is that which can be useful to most people. Deontologists, on the other hand, maintain that ends do not justify means, and that an individual's interests, freedom and possibility of choice must be central. Several commentators hold the view that the utilitarian approach tends to predominate in the current HMS research environment. Whilst giving no direct support to this contention, the results of this study reflect, at the very least, an absence of deontologic concerns as evinced by the researchers sampled. The lack of recognition of the primarily deontologic ethical problem areas inserted into the research proposals provides evidence of this, as does, to some extent, the non-reporting of the informed consent process illustrated by the journal search. In the absence of any identifiable deontologic approach in research practice, it could therefore reasonably be presumed that consequence-based considerations dominate ethical thinking, if ethical thinking in fact takes place. This is further supported by the literature review of current research practices in HMS. It is however interesting to note that, whilst there are overall deficiencies, and differences between SA and Comparison samples in terms of accountability towards ethical guidelines, regulations do exist in most departments. Such regulations, probably without exception, are deontology-based, an approach which has proved pervasive in ethical codifications. The results of particularly the responses to research proposals however cast some indirect doubt as to the efficacy of regulations, and importantly, indicate a discrepancy between theory and practice.

Given the above, which ethical theory should drive moral decision making in HMS

research? A deontologic approach has generally been more popular, mainly because different moral dilemmas are similar in several relevant respects. Rules are thus useful in their universality. From a practical point of view, rules are useful in that we often do not have the time needed to perform the sort of "moral accounting" required by consequence-based theories. Further, rules encourage consistency in moral behaviour. Bearing these factors in mind, the application of clear deontologic guidelines would presumably have produced very different results in respect of the responses to the research proposals by reviewers. On the negative side, if we insist on the rigid application of a deontologic code, we may be faced with unique situations where rules do not apply. Also, in some situations rules may conflict, and it may not be clear which rule should take precedence. Finally, rigid compliance with rules may deflect attention from consequences altogether, and may result in loss of potential benefits, or may replace genuine care and legitimate concern for the welfare of others. Whilst consequence-based theories are useful in that they provide practical guidelines for assessing the morality of actions, they are problematic. Obligations to others may be ignored, an extreme example being when the absolute commitment to maximising the good leads to the harm of innocent persons in order to maximise the happiness of society. Insistence on consequences as the ultimate standard of what is right may often be counterintuitive, and further, even if two acts are equal in terms of consequences, the benefits and burdens will not necessarily be distributed justly. Where does this disagreement leave us? Before attempting a final answer, some further specific ethical issues need to be examined in the light of the findings of this study.

HMS research often utilises "captive" populations, such as school children, students, team members, tournament participants, and patients. In situations such as these, as indeed in virtually any institutional setting, the possibility of coercion and sanction exists. The literature review and results of this study, plus extensive experience on the part of the author, indicate that in many HMS research contexts, subtle (and not-so-subtle) coercive tactics prevail, with the

threat of sanction attached to non-participation also operating. Utilising "captive" populations is of course not necessarily unethical. Besides, for example, educative benefits in tertiary institutions in the form of laboratory practicals or student research, participants may benefit personally in a variety of ways, to say nothing of generalisable benefits in terms of advancement of knowledge. The point however is that in settings that may predispose towards a devaluation of autonomy, such participation needs to be clearly justified. At issue now is not just how informed participants are, but how free they are, and researchers need to question whether utility trumps the right to self-determination of the individuals concerned. This is of course not to suggest that the notion of utility should be discarded. Rather, it is contended that where "captive" populations are recruited, there must be good reason to involve such participants in the research, particularly if children are to constitute the experimental group. Detailed guidelines exist as to such recruitment, and these guidelines should be followed. It could be argued that such stringency may limit the amount of research conducted, and that this will negatively affect advances in the discipline. This is unlikely, as a carefully conducted recruitment process does not necessarily entail a drastic reduction in the number of "volunteers" for studies. Proper planning and care may in fact predispose towards truly free volunteering. In any event, following a deontologic line, the primary question addressed here is not whether research is conducted, but whether the autonomy of subjects is disregarded. This study does not advocate a naive, completely libertarian approach to research in HMS. The principle of utility should not be discarded. However, generally speaking, it is contended that considerations of right to self-determination ought to outweigh utility, and if the reverse is the case in practice, such research needs to be carefully justified.

Individuals can of course knowingly sacrifice their freedom, one method being through the informed consent process. Past abuses of research participants, as well as growing support for a legislative culture of human rights, have led to the implementation of the ethical imperative of obtaining informed consent prior to

commencing experimentation. This process involves, among other considerations, fully informing potential participants of the nature, risks, and benefits of the prospective study; implementing a successful verbal and written communication strategy to ensure full and adequate comprehension by all concerned; and allowing freedom of choice by presenting opportunities for non-participation or withdrawal at any time, without elements of coercion or sanction being applied. Several other considerations apply in special circumstances, *inter alia*, such as when dealing with the aged, with children, with populations of diminished mental capacity, and in transcultural situations; these measures all intended to serve as protection for research participants. The above constitutes the theoretical expectations of the concept. In practice, it is a hotly-debated process with some weaknesses. For example, consider a prospective preventive health research project in a rural community. Let us assume that the project entails no risk of any sort of harm, does not violate cultural considerations, and will directly benefit the community involved. The vast majority of the community are however illiterate. Strict application of written, first-person informed consent procedures (based on autonomy) would mean prohibition of the research. As earlier, whilst embracing an autonomy-based model of research, this study contends that, given careful consideration, autonomy can be overridden, and soft-paternalism can be justified in certain instances. In this case, the absence of risk and presence of benefits, well-planned attempts to communicate in the participants' first language, permission to proceed from individuals and relevant authority figures, plus other considerations, would be sufficient justification to proceed.

The above example implicity recognises adherence to the ethical imperative of informed consent, and explicitly practices it through careful consideration of the issues involved. Does this happen in HMS? The results of this study, expressed through the responses to the research proposals, as well as the journal search data, indicate that insufficient attention is paid to the process by HMS researchers. At best, they might view their investigations as so benign as to not

require implementation of consent procedures. At worst, they might justify the omissions by appealing to utilitarian considerations. Either way, it seems that if the process is applied at all, in many cases mere lip-service is paid to the tenets which it embraces. Whilst acknowledging the imperfections inherent in the informed consent concept, and recognising certain difficulties in its practical application, this study contends that it is incumbent upon researchers to recognise and respect the rights of research participants, to the extent that they override the right to conduct research. Paternalistically depriving someone of the right to make a free and fully informed choice, in the absence of coercion or sanction, would require careful justification.

The growth of research in HMS needs to be viewed against the backdrop of the recent democratisation of South African society. In this context, the results of this study, as well as the literature review and the authors practical experience in the discipline, indicate that South African HMS departments are deficient in terms of the existence and application of ethical guidelines pertaining to transcultural research situations. If research is growing, transcultural research is probably doing so at an exponential rate. Examples abound, the most prominent possibly exemplified by the Sports Information and Science Agency programmes, and research utilising the new multicultural South African National Defence Force. In situations such as these, it is important to question the extent to which research ethics guidelines ought to embrace relativist or universal principles. Universality holds that the principles governing research are the same wherever research is conducted, while relativism contends that, since ethics are socially constructed, they will vary according to the cultural setting in which they are formulated. There is little doubt that, for example, obtaining informed consent in transcultural contexts may pose special problems for investigators. Further, the relevance of the process may even be questioned, given the varying perceptions of personhood in different cultures. Nevertheless, whilst recognising the dangers of generalisation, this thesis contends that the essentially Western notion of first person informed consent expresses values that are universally applicable and

worthwhile. Specifically, this approach evinces respect for a person's autonomy, without necessarily neglecting considerations relating to either community or culture. In cases where cultural differences exist, researchers may need to make an extra effort to communicate effectively. If we acknowledge and respect a person's autonomy, and do so in conjunction with a consideration of relevant cultural factors, we are unlikely to violate either their right to self-determination or their society's values. On the other hand, if in cross-cultural settings we ignore either consideration, for example in the informed consent process, we may precipitate ethical conflict. Social and cultural factors should thus always be considered when evaluating both ethical and methodological merits of a proposed investigation.

Such factors should not be considered by researchers alone, but also by the Institutional Review Boards or Ethics Committees to which they are accountable. These committees require investigators to justify their research on humans to a peer review group prior to the commencement of experimentation. Both the composition and functions of IRBs have changed in recent years, such changes reflecting a growing concern with broader methodologic issues than ethics alone. The increasing regulation and legislation has not necessarily been accepted by researchers in general, with a growing feeling that the spiralling bureaucratic procedures hamper research through inconsistent judgements and over-regulation. Further, it has been contended that the negative aspects of the process may in fact erode the very ethic that it is intended to promote. Put differently, increasing resentment and alienation may lead to researchers adopting questionable practices, or at best, merely paying lip-service to ethics review procedures. The results of this study have two important implications pertaining to the institutional review process. Firstly, not being subject to central legislation, South African HMS departments have been slow to voluntarily adopt regulations governing ethical conduct in research. Secondly, and importantly, the HMS researchers involved in the responses to research proposals clearly were not able to act as capable reviewers in terms of identifying ethical problems. This

provides strong support for the contention that researchers are unable to judge the ethical merits of their research in an unbiased manner. It seems reasonable to accept that most researchers are likely to overestimate the benefits, and underestimate the risks, of their own research, from which it follows that they are unlikely to be able to objectively conduct an ethical review of their own work. Add to this the pressures to publish, and to acquire funding, and the necessity for independent ethical review becomes apparent. It could of course be contended that there is no regulation like self-regulation, but the review of literature of this study, as well as the evaluation of current research in HMS, indicate that investigators have historically exhibited a pervasive inability to regulate themselves in a manner judged to be ethical by broader society. None of the above detracts from the fact that the ethical review system has flaws. However, while they may stifle creativity and at times shackle the research process, their existence is positive in that not only do they introduce necessary regulation, but they promote the protection of investigators. Importantly, as well, their proper function should foster and promote the development of quality research. The disadvantages are thus outweighed by the benefits of careful planning, close adherence to the scientific ethic, and maximum protection for research participants. As with informed consent, the practical imperfections should not lead to the process being discarded.

The literature review and the results of this study seem to indicate that, in the HMS tertiary education system, ethics courses may have been relegated in importance relative to the functional components of curricula. Generally speaking, ethics teaching units are sub-courses, residing within broader frameworks such as Research Methods and Statistics. Whilst HMS practitioners might contend that current teaching practices are sufficient, the previously discussed results of this study suggest otherwise; particularly the data resulting from the responses to the research proposals. In identifying deficiencies in current HMS research practices, this thesis holds that only a sound and persistent educational effort will bring about real changes in research involving humans.

One's ability to reason through moral dilemmas is determined by cognitive moral ability, which is developed by being exposed to ethical concepts and principles. The development of ethics courses and the relevant materials should be a combined enterprise between HMS professionals and philosophers, with a generalised research ethics course for all human sciences students offering practical advantages in terms of staffing, as well as some assurances of teaching competence. Also, such a course would provide students with a broad, cross-discipline outline of research practices, and would illustrate the point that ethics is a fundamental and necessary part of the research process. In constructing such a course, it would be useful to bear in mind current views on teaching and learning, such as schema theory, particularly if learners are English second language speakers, as is increasingly the case in South African tertiary institutions. Courses could incorporate the practical through the use of case studies, debates, and current issues from the media. These should be used to elucidate broader ethical principles, and moral rules, and should involve reflection, insight, and theoretical and practical judgement. Role-play in seminal cases could be utilised, as could critical literature surveys of the relevant professional literature. When allied to discussion of individual, actual research projects of students, this approach will ensure that ethical theories and principles are not introduced in an abstract, impersonal, or purely academic manner. The principles are integrated with previously acquired background knowledge, theoretical interpretations, seminal cases, and current professional practices. The process is interactive, being theory- and practice-driven, combining reflection and application in a way that is meaningful to future researchers who may otherwise reject a more abstract approach. This study then contends that the morality of how researchers treat other people is too important to be left to chance. The role of ethics curricula is to combat ignorance and to ensure right conduct. Without adequate educative exposure, future researchers may remain ethically in the dark.

What sort of guidance can this study offer in terms of ethical decision making in

research contexts involving humans? Or, to address the previously unanswered question, where does the disagreement between ethical theories leave us? Firstly, it is unlikely that we will reach unassailably definitive answers. Ethical systems cannot, and should not, eliminate ethical discourse. Rather, they provide a working framework for such discourse - a framework for the confrontation of particular situations that pose ethical problems. In short, the practice of ethics provides a mechanism for reasoned and systematic approaches to moral philosophy, not finality. Nevertheless, a primary professional goal of research is to find what is thought to be best for others, and we need to bring ethical theories to bear on real-world problems. Perhaps the difficult questions of morality in research contexts do not concern whether or not to invoke and apply principles or rules. Rather, attention should be directed to the question of which principles and rules should be adopted, how they should be interpreted, how much weight they should have, which should have priority in cases of conflict, and in what situations they should apply. Constant review seems to be a prerequisite for research involving human participants, with such research being justified by appealing to ethical principles and rules.

If it were necessary to accept one particular ethical theory to serve as a framework to guide research ethics, and to exclude others, this thesis would lean towards acceptance of a deontology-based model. However, utilitarian concerns may contribute positively towards research outcomes and should not be neglected. Ideally, when evaluating research projects for ethical acceptability, both utilitarian and deontologic criteria should be applied. The results should be important (utilitarian); the benefit/risk ratio should be favourable (utilitarian); voluntary informed consent should be obtained (deontologic); and considerations such as privacy, cultural factors, confidentiality, and deception, should set limits on the conduct of research. Lastly, projects should be subject to independent ethical review. As presented above, the utilitarian conditions could be viewed as necessary but not sufficient conditions for research to proceed. The unjustified absence of any of the deontologic concerns may morally invalidate research that

satisfies the utilitarian criteria. The practical implication of this is that in any codification of research ethics for HMS, priority ought to be assigned to principles based on duty, rights, and obligations. This deontology-loaded approach is consistent with the contention that the use of humans in research is a privilege, and that the rights of research participants ought to outweigh the desire of researchers to conduct research.

HYPOTHESIS RETENTION/REJECTION

To the extent that the empirical data complement the overall analysis, and bearing in mind the limitations of the statistical treatments, the following conclusions were drawn regarding the hypotheses.

Hypothesis 1: There will be no differences between the incidence of acceptance, revision, and rejection, by HMS professionals, with respect to the review process of specifically constructed, ethically problematic, research proposals.

The findings of this research support a *tentative acceptance of the alternative hypothesis*, namely that there were differences between the incidence of acceptance, revision, and rejection, by HMS professionals, with respect to the review process of specifically constructed, ethically problematic research proposals.

Hypothesis 2: There will be no difference in the incidence of reporting the informed consent process between categories of HMS journals.

The findings of this research support a *tentative acceptance of the alternative hypothesis*, namely that there were differences in the incidence of reporting the informed consent process between the following categories of HMS journals: physiological, biophysical, psycho-social, professional, multidisciplinary.

Hypothesis 3: There will be no differences between South African and Comparison sample HMS departments in terms of accountability to regulations governing ethical issues in research.

The findings of this research generally support a *tentative retention of the null hypothesis*, namely that there were no differences between South African and Comparison sample HMS departments in terms of accountability to regulations governing ethical issues in research. (It is worth noting that there was a difference with respect to guidelines regarding the use of children as research participants. Also, several differences were observed when Chi-square was performed, but implementation of the Yates correction factor reduced these differences to statistical non-significance.)

CONCLUSIONS

The nature of this study dictated that several general, rather than specific, conclusions be drawn.

1 As with other disciplines, societal and professional pressures for progress will continue to result in an increase of research in HMS.

2 While existing codifications of research ethics are largely deontology-based, the findings of this study suggest that utilitarian considerations dominate research in HMS, indicating a disparity between theory and practice.

3 Despite the deliberate insertion of several moral problem areas into research proposals, the HMS professionals surveyed by this study failed to recognise the ethical difficulties entailed. This specifically reflects a lack of concern with deontologic issues in the practice of HMS research, that may well be generalisable beyond the sample here investigated.

4 Adherence to a recognised informed consent process may be inadequate in HMS research.

5 Generally speaking, South African HMS departments are deficient in terms of accountability towards guidelines governing ethical practices in research contexts.

6 Education in research ethics may be deficient, with such courses perhaps being devalued in tertiary curricula.

7 Only a sound, persistent educative effort will succeed in bringing about changes in research practices involving humans.

8 The practice of utilising "captive" populations is prevalent in HMS research. Whilst not discarding the principle of utility, the use of such populations should be carefully justified.

9 Finality on ethical questions is not possible. Competing ethical theories provide a framework for moral discourse.

10 Deontologic issues should dominate ethical decision making in HMS research contexts. Appraisals of utility should not be discarded, but issues such as rights, duties, and obligations should take precedence over consequential considerations.

11 The use of humans in research is a privilege. Generally speaking, the rights of research participants ought to outweigh the desires of research to conduct experiments. Overriding such rights requires careful justification.

12 Insufficient attention is paid to ethical issues in HMS research. Constant review seems to be a prerequisite for ethical practices.

RECOMMENDATIONS

In the absence of central legislation, and given the current state of flux regarding governance of HMS by any one organisation or body in South Africa, the following recommendations are initially targeted towards individual HMS departments.

1 It is recommended that specific ethical guidelines be constructed to regulate research practices. These should include considerations such as the informed consent process, deception, scientific misconduct, privacy, confidentiality, issues in transcultural research, and utilising "captive" populations.

2 Such guidelines should be based on deontologic concerns, and ongoing ethical review of current projects should take place to ensure that research practices continue to conform to the guidelines.

3 Where they do not exist, Institutional Review Boards should be established. Their composition, and function should be clarified, as should the nature and types of the research for which they will be responsible.

4 Specific and relevant courses in research ethics should be constructed, and these courses should be given increased prominence in tertiary curricula.

5 Journal requirements regarding ethical acceptability of publications should be stringent, and should be clearly and prominently communicated to potential contributors.

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APPENDIX 1

RESEARCH PROPOSAL 1: SPORTS SCIENCE

INTRAVENOUS FLUID ADMINISTRATION FOLLOWING A MARATHON

Introduction

Running a marathon jeopardizes the fluid balance. It also causes a large loss of water and electrolytes. Exercise-induced dehydration alters fluid-electrolyte homeostasis, cardiovascular functions and thermal balance. Prolonged exercise also depletes muscle glycogen stores. Fluid replacement is essential to restore physical working capacity, beverages usually being taken to accomplish this. Inhibition of gastric emptying after strenuous exercise can prolong the period needed to restore the fluid balance. Moreover, usually less fluid is ingested than the amount lost, and drinking does not restore plasma volume within 3h.

Aims of the research

A search of the literature has shown that there are almost no data available dealing with recovery after a marathon race. Therefore this study has been designed to gather information about the recovery of marathon runners and the effect of intravenous fluid infusion immediately following the race. The primary question to be addressed is: does immediate intravenous fluid replacement affect recovery after a marathon race?

Methods

The study population will be chosen from competitors in the Herald/Ford PE Marathon. As part of the entry form for the race, all runners will be required to provide the following biographical information: name and address, sex, age (yrs), length (cm), previous marathons (n), experience (yrs), weekly training sessions (n), weekly training (km), best marathon time (min). One hundred finishing positions between the winning time and 2 hrs 59 mins (fast group) will be randomly pre-selected, and these positions will further be randomly pre-assigned to one of two groups. As they finish, athletes in these pre-determined positions will be asked whether or not they would like treatment that may assist their post-race recovery. The participants will receive an IV infusion (100ml 0.9% NaCl in Group I and 2.5l 2.5% glucose 0.45% NaCl in group 2), administered by suitably trained research assistants, under the supervision of the principal researcher. Infusions to the two groups will take place in separate rooms, and it is envisaged that the group 1 infusion (the placebo group) will take 15 min and the group 2 infusion 50 min. Prior to infusion, participants will be weighed and rectal temperature will be obtained. Questionnaires concerning recovery, pain, stiffness, loss of appetite, sleep disturbance, and fatigue, will be distributed to participants, who will be required to complete them on the 36 days following the marathon. On days 1, 3, 7, 14 and 21 athletes will be asked to determine their weight, pulse rate and rectal temperature, having received adequate instruction on the relevant procedures. Data will be analysed using Students' t- tests.

Below are more specific details regarding the questionnaire:

1 Recovery

An athlete will be considered to have recovered when the unpleasant after effects of the marathon have disappeared, and when normal running activities are resumed.

2 **Pain and stiffness**
Athletes will be asked to classify their muscle pain and/or stiffness on a 0-10 visual analogue scale (0 = no pain/stiffness, 10 = maximal pain/stiffness), during the 36 days following the marathon.

3 **Fatigue**
Each athlete will be asked to judge the fatigue he felt during the day, and will be asked to classify this on a 0-10 scale (0 = no fatigue, 10 = maximal fatigue).

4 **Appetite and Sleep**
Athletes will be asked to judge any appetite or sleep changes.

5 **Training**
Athletes will be asked to report their training sessions and the difficulties they had with their training after the marathon.

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APPENDIX 2

RESEARCH PROPOSAL 2: MEASUREMENT AND EVALUATION

PERFORMANCE AND ATTITUDINAL RESPONSES TO MILITARY BASIC TRAINING

Introduction

The benefits of a well-conditioned military population are obvious from both a medical and an operational point of view. An effective training programme will pay dividends in terms of increased work capacity and efficiency, promote health and weight control, and may attenuate several of the risk factors associated with coronary heart disease (Kowal and Daniels 1979). Operationally, the soldier needs to be combat ready, possessing the physical fitness characteristics that a particular task will require.

Rogers (1977) lists the following fitness factors as being of importance to the military: endurance, muscular strength, flexibility, speed, agility and motivation. For any improvements in these factors to occur in response to training, the "training effect" must be understood. Responses to training are related to the intensity, frequency and duration of the programme (Shephard 1968, Davies and Knibbs 1971, Pollock et al. 1972, Fox et al. 1973, Wenger and MacNab 1975, Gettman et al. 1976). Another aspect of the training effect concerns task specificity, i.e. the training overload must be closely related to the desired performance task (Weltman and Stamford 1983). The concept of specificity has been supported by findings indicating specificity of training at the subcellular level (McCafferty & Horvath 1977, Perez 1981). In addition to the above principles, recovery is also an important factor in the training effect. Inadequate recovery from strenuous activity may adversely affect responses to training (McCafferty & Horvath 1977). Members of the military population are constantly exposed to physical activity of various types and varying intensities. Their general fitness needs must therefore be met by a training programme that is general in nature. Time limitations and group size also determine the general nature of the programme. This general training programme must however be effective in achieving the desired training effects, i.e. the programme must be effective in preparing civilians for the unaccustomed rigours of military life, and it must be effective in enabling members of the military to perform physical tasks efficiently.

Aims of the research

Military fitness training is of necessity general in nature. The primary question to be addressed is whether or not 8 weeks of basic training serves to acheive the physical fitness needs of the South African National Defence Force (SANDF). This should enable investigators to evaluate the programme in terms of frequency, intensity, nature, and duration.

Methods

One hundred and twenty military trainees will be tested before and after eight weeks of SANDF basic training. Both tests will be conducted at the same locale, under similar weather conditions and at the same time of day. All the subjects will be drawn from D

Company, 6 South African Infantry, Grahamstown. Clothing worn by the subjects during testing will be overalls and combat boots.

The following tests will be administered:

1) Semantic Differential Attitude Scale (Osgood et al. 1957, Oskamp 1977 and Baumgartner & Jackson 1982);
2) Stature;
3) Body mass;
4) Triceps, biceps, subscapular and suprailiac skinfold measures (Durnin & Womersley 1974);
5) Sit, reach and hold (Wells & Dillon 1952);
6) Right and left hand-grip strength;
7) One minute sit-ups and one minute push-ups;
8) Shuttle-run;
9) Fifty metre sprint (McArdle et al. 1981) and
10) Fifteen minute run (Cooper 1968, Doolittle & Bigbee 1968, Maksud and Coutts 1971 and Myles et al. 1980).

The derived data obtained from the above will be as follows:

1) Evaluation, Potency and Activity factors and total score of the attitude scale.
2) Relative body fat, and lean body mass.
3) Relative grip strength. (Calculated by dividing total grip strength by body mass, and as such is presented as a function of the body mass.)
4) VO_2 max. as predicted from the 15 minute run according to the formula presented by Balke (1963).

Motivation is known to play an important part in the validity of effort-dependent physical fitness tests (Strong 1963) and the validity of such tests is consequently dependent upon securing the all-out efforts of the subjects. Every effort will therefore be made by the testers to motivate the subjects by means of verbal encouragement.

Means, standard deviations and co-efficients of variation will be computed for all raw data and derived variables. Related t-tests will be applied to determine whether there are significant differences (p 0,05) between the results of tests 1 & 2. The percentage difference between results of the two tests will then be calculated to ascertain the extent of such differences, if any.

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APPENDIX 3

RESEARCH PROPOSAL 3: BIOMECHANICS

MYOELECTRICAL AND KINEMATIC RESPONSES TO REPETITIVE PLYOMETRIC EXERCISES

Introduction & Review of Literature

In recent times, plyometric exercises have assumed an increasing importance as a component of the training programme for a wide variety of sports. Coaches and athletes need training methods that take only a little time, yet still produce the desired effect, without involving an excessive risk of injury (Bobbert, 1990). Plyometric training however carries an inherent high risk of injury, particularly when performed outside safe, validated guidelines. Accepting this, an understanding of the effects of fatigue on biomechanical parameters during repetitive jumping drills is important in prescribing effective plyometric training.

The functioning of the neuromuscular system during explosive force production such as vertical jumping is characterized by a so-called stretch-shortening cycle, in which the active muscle is forced to stretch in the eccentric phase of contact. This can improve the subsequent concentric contraction (Cavagna et al., 1965). There are two interconnected ways in which the eccentric phase of muscle contraction can affect the concentric phase: (1) activation of the muscle spindles during stretching improves muscular activity through reflex paths (Dietz et al., 1979), and (2) energy is transferred by elastic elements from the eccentric to the concentric phase (Cavagna et al., 1971). Neuromuscular function in jumping is thought to be influenced by such parameters as velocity of stretch (Bosco et al., 1982a), coupling time between the eccentric and concentric phases of contact (Cavagna et al., 1975; Bosco et al., 1981), length of eccentric stretch (Bosco et al., 1982b), muscle fibre composition (Bosco et al., 1982c; Viitasalo et al., 1984), pre-programmed activation patterns of higher centres of the nervous system (Melvill-Jones and Watt, 1971; Viitasalo and Auro, 1987), sex and age of the subjects (Bosco and Komi, 1980), and training level of the neuromuscular system (Viitasalo and Lahtinen, 1991). Although the effects of fatigue on neuromuscular functioning generally have been widely reported, there have been few studies on the effects of fatigue on vertical jumping characteristics (Bosco et al., 1986; Moritani et al., 1990). The training of the explosive power output of the athlete's lower extremities includes, however, jumping exercises in various sports events such as ball games and track and field. In some instances, these exercises include several successive take-offs. An understanding of changes in biomechanical parameters during a continuous jumping drill is important when selecting the number of contractions to be performed in, or the duration of, a jumping drill.

Aims of the Research

The aim of the study is to investigate the fatigue effects of continuous hurdle jumping on myoelectrical activity of selected lower extremity muscles, ground reaction forces, vertical movements of the body's centre of mass and knee joint angular kinematics.

Methods

Twenty male undergraduate students will be recruited from the Human Movement Studies department at Rhodes University. Five test sessions, utilising four subjects on each occasion, will be conducted. Subjects will be permitted a three minute warm-up session, after which they will be required to perform 3x75 s depth jumps (starting height 100 cm, finishing height 50 cm). A minimum of 30 jumps per set will be required, and there will be a rest period of 20 s between sets.

This preliminary activity will be followed by a continuous hurdle jumping exercise over three hurdles (height 65 cm)

with bilateral foot contact, so that, after successive jumps over the three hurdles, the subjects will turn around and continue jumping over the same hurdles in the opposite direction. The drill will last for 60 s, and will be repeated 3 times, with 90 s recovery between sets. It is estimated that subjects will perform 40-50 jumps per set.

The hurdles will be located along a line of four force-platforms (built by the technical staff of the Physics Deparment, and having a natural frequency of 140 Hz) so that three-dimensional ground reaction forces can be measured for each take-off. An electrical goniometer of mass 58 g (as per Viitasalo and Aura, 1987) will be attached to the right knee. Myoelectrical activity (EMG) will be registered during the entire jumping drill using Beckman bipolar surface electrodes, 4 mm in diameter and placed at 10 mm intervals over the muscle bellies (located by palpation of contracted muscles) of the M. vastus lateralis, vastus medialis, rectus femoris, gastrocnemius, gluteus maximus and biceps femoris of the dominant leg. The initial focus of the research will deal with EMG activity in the three knee extensor muscles. The pre-amplified EMG and angle signals will be transmitted telemetrically (Glonner, Biomes 2000) and will be stored together in synchronization with the force signals on a microcomputer memory (AT-MCA-Codas, Dataq Instruments, Inc., Ohio) with a sampling frequency of 500 Hz.

The EMG signals will be full-wave rectified and averaged (AEMG) for a pre-contact phase of 55 ms and for the eccentric and concentric phases, which will be determined by the contact time and minimum angular position of the knee (as per Viitasalo and Aura, 1987). Average resultant force from the force-platform will be calculated separately for both the eccentric and concentric phases. The knee angle values will be determined at touch-down, at the deepest position (eccentric-concentric transition) and at take-off. Average knee angular displacements and velocities as well as contact times will be calculated for the eccentric and concentric phases separately (Viitasalo and Aura, 1987). Peak eccentric and concentric knee angular velocities will be determined using the first derivative of the knee angle-time curve. The time taken to reach peak angular velocity will be calculated from the beginning of the eccentric and concentric phases, respectively. The jumping will be video-taped (30 Hz) with the optical axis of the camera perpendicular to the plane of motion. The positions of the head, shoulder, elbow, wrist, hip, knee, ankle and foot will be digitized unilaterally (Aerial Performance Analysis System, Inc.). The location of the body's centre of mass will be determined at take-off, at the highest point above a hurdle, at touch-down and at the lowest point during ground contact.

For further analysis, the three hurdle jumps in one direction and the three corresponding jumps in the reverse direction will be treated as one series by averaging the two middle contacts in each direction for each variable. Thus one series will include the average of four contacts excluding take-offs from the turn.

The three highest spike jumps performed before the hurdle jumping will also be analysed in a similar manner to the hurdle jumps. The values of the variables in the three spikes will be averaged for further comparisons with the hurdle jump variables. Paired Student's t-test will be used for comparisons of series (Norusis, 1990).

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APPENDIX 4

RESEARCH PROPOSAL 4: PERCEPTUAL AND MOTOR LEARNING

THE EFFECT OF ALCOHOL INGESTION ON PERCEPTUAL MOTOR SKILLS RELATED TO DRIVING

Introduction & Review of Literature

Road accidents, particularly those involving minibus taxis, have shown a marked increase in South Africa during the past few years (Verwoerd, 1995). Several possible reasons have been advanced in an attempt to explain this trend, such as unlicensed drivers, unsafe conditions of vehicles, increased number of road users, and alcohol use by drivers (Galombik et al, 1994).

Despite the extensive social problem of drinking and road accidents, specific causal links between alcohol and accident proneness are elusive. Although the problem is often assumed to involve only perceptual-motor skill, in reality all the following questions may bear on this complex problem. (1) Does the drinker possess the perceptual-motor coordination skills necessary for driving? (2) Is the drinker's behavioural caution reduced? (3) Is perception affected: are vigilance and perceptual decision making impaired? (4) Can drinkers accurately monitor their own level of behavioural efficiency, so as to drive within this limit? Potentially, a worst-case scenario would involve a driver with reduced perceptual and motor skills, who compounds this by driving with excessive confidence, treating perceptual information carelessly, and by not perceiving this impairment.

Several studies have indicated the harmful effects of alcohol on skill, in particular driving skill (e.g. Laurell 1977), yet their results are often ambiguous, reflecting the widely varying methodology employed. Robinson and Peebles (1974), for example, found that a blood alcohol concentration (bac) of .05 impaired performance only on complex tasks, whereas a bac of .10 diminished skill on all the experimental tasks used. Levine, Karmer, and Levine (1975), in a literature review, conclude that at high doses a modest (e.g. 20%) impairment of skill occurs. The present study will involve two perceptual motor skill tasks, a driving simulation and a game simulation, both in video format. While the video task is simpler than actual driving, it requires dynamic visual-motor coordination and is probably more realistic as a performance index than traditional laboratory skill tasks.

Alcohol has also been reported to affect risk-taking and risk evaluation. Cohen (1960) found that alcohol causes an underestimation of situational risk but does not increase actual risk-taking. However, Teger, Katkin, and Pruitt (1969) have criticized the methodology of this study. In their study, the Kogan and Wallach Choice Dilemma Questionnaire was administered, and their results indicate that alcohol increased willingness to take risks. In the present experiment this questionnaire will be employed as one index of risk taking, as well as behavioural measures of risk-taking as shown in the videogame tasks.

Various studies (Collins, Schroeder, Gilson, & Guedry, 1971; Collins, 1979; Collins & Chiles, 1980: Putz-Anderson, Setzer, & Croxton, 1981) have all reported that alcohol impairs performance on visual tracking tasks. Hamilton and Copeman (1970) found that alcohol decreased overall efficiency in the tracking and peripheral detection of a visual stimulus, but that no impairment occurred in the central detection of a target. Unfortunately, these experiments employed very small samples. A visual signal-detection task will be utilised in this research to measure simultaneously the subject's perceptual vigilance (or acuity), termed d', and degree of caution in perceptual decisions, or beta (Swets, Turner, & Birdsall, 1961).

A related area of interest is the ability of subjects to estimate the amount of alcohol that they have consumed. Vuchnich and Sobell (1978), and Williams, Goldman, and Williams (1981) conducted controlled studies, where subjects received alcohol when expecting none, or vice versa. The subjects could not accurately judge whether they

received alcohol or not. Previous research indicates that experimental subjects, even when aware of receiving alcohol, may have difficulty in estimating the amount. Ogurzsoff and Vogel-Sprott (1976) reported that subjects with a mean bac of .066% made a mean absolute error of .025% when estimating their blood alcohol level. Lipscomb and Nathan (1980) found that individuals with low tolerance to alcohol judge their bac more accurately than individuals with high tolerance. Both studies required subjects to estimate their blood alcohol concentration, whereas in the present experiment subjects will attempt to judge how many ounces of 40% alcohol they consume.

It is a common psychophysical principle that small stimuli are perceptually exaggerated, while larger ones are relatively diminished (Stevens, 1957). Therefore, it is predicted that those subjects who receive a low dose of alcohol (bac = .04%) will overestimate the amount received. Subjects in the high-dose condition (bac = .12%), however, are predicted to underestimate their alcohol intake. Together with these estimates of intake, subjects will give ratings of their subjective feelings of drunkenness.

Finally, a set of personality inventories (Locus of Control, Eysenck Personality Inventory, State-Trait Anxiety, Sensation Seeking and Social Readjustment) and biographical data will be used to determine whether there is a certain personality type or life-pattern associated with the performance measures of skill, risk-taking and vigilance. These data will hopefully provide a comparative basis for evaluating the functional significance of possible alcohol effects.

Aims of the Research

The study will attempt to investigate the possible effects of alcohol on selected components of perceptual motor skills that may be relevant to driving, and on behavioural components of driving, such as risk taking among South African minibus taxi drivers. Specifically, the study will examine whether blood alcohol concentrations (bac) of 0.04% (one-half the legal limit) and 0.12% impair psychomotor skill, level of caution, and perceptual accuracy. In addition, self-rated drunkenness will be assessed, as will the ability of the drivers to estimate the amount of alcohol they have consumed. Finally, an attempt will be made to relate performance to personality & biographical factors.

Methods and Procedures

The Zululand Black Taxi Drivers Union (Zubtu) will be approached to provide forty volunteer subjects for the project. Full membership status of the Union will be a requirement for participation, the implication being that subjects will be active drivers. Testing will take place in the evening at the Human Movement Science Department, University of Zululand.

Apparatus and materials

(a) **Simulated driving task**: A microcomputer programme (International Grand Prix, by Riverside Software) will present a dynamic simulated driver's eye view of a road circuit, and a speedometer, on the monitor of an Apple IIe. The subject will regulate steering and speed by means of hand controls. The programme will record the subject's lap times and number of accidents (off-road errors); these will be taken as measures of skill and risk-taking, respectively. The top speed reached will also be shown; this will provide an additional index of risk-taking.
(b) **Simulated racquetball task**: Another program (Brickout, by Apple Computer, Inc.) will be employed to provide a videogame that broadly resembles racquetball and is unrelated to driving. Skill will be assessed as the game score (targets hit), and risk-taking as the size of racquet chosen (a small racquet gives the player more points per hit, but increases the difficulty of the game).

(c) **Cognitive risk**: The Choice Dilemma Questionnaire of Kogan and Wallach (1964) will provide a measure of risk-taking in cognitive judgements.
(d) **Signal-detection task**: A program by Perera and Houdin (1983) will be employed in which the subject must detect the occurrence of a brief visual target (an X) among an array of briefly flashed 'Z' stimuli;the target appearing on only 50% of the trials. The stimuli will be flashed at successive random locations on the computer screen, for 50 msec. each, the entire sequence requiring 2 sec. per trial. The subject's responses will be typed on the keyboard.
(e) **Self-rated drunkenness scale (SRD)**: The subject will be asked, 'How drunk do you feel right now?' and will respond on a five-point scale: (1) not at all, (2) very little, (3) moderately, (4) very, (5) extremely.
(f) **Personality inventories**: The following scales will be employed: Locus of Control (Rotter, 1966); Eysenck Personality Inventory, Form A (1968), to provide Neuroticism, Extraversion & Lie scores; State-Trait Anxiety Inventory (Spielberger, 1970); Sensation Seeking (Zuckerman, 1977); Social Readjustment (Holmes & Rahe, 1967), to provide a measure of preceding life stress.
g) **Personal biography**: A questionnaire will be employed to record the subject's biographical data, plus details of drinking history, driving history, accidents and videogame experience.
h) **Alcohol and breathalyser**: Absolute alcohol (94% alcohol by volume) and concentrated orange juice will be used, plus a Hedonic PMT-1 breathalyser.

Subjects will be asked to fast for three hours before testing. Each subject will sign a release form and will be randomly assigned to a placebo, low alcohol or high alcohol condition. The respective doses of absolute alcohol given will be .34 ml/kg body weight and 1.04 ml/kg, added to orange juice concentrate to yield a total volume of 300 ml. These doses correspond to bac levels of .04 and .12, the former being below the legal limit for driving, the latter 50% above it. These levels will be monitored by means of breathalyser readings during the test period. A few drops of scotch will be floated on the placebo as an olfactory disguise. Subjects will be unaware of their treatment condition.

The subject will be allowed 30 min. in which to drink the preparation, during which time he will complete the personality inventories and a brief biographical questionnaire covering his drinking and driving history and videogame experience. The subject will then be tested with the Brickout game (8 trials), two repetitions of the driving task (5 laps each following 2 practice laps), the signal-detection task (100 trials) and the Choice Dilemma Questionnaire. Instructions for these tasks will stress both speed and accuracy. Finally, the subject will estimate how much alcohol he has consumed, as ounces of commercial liquor, and will rate his degree of drunkenness on the SRD scale. Testing will require approximately 120 min. in all.

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APPENDIX 5

RESEARCH PROPOSAL 5: ERGONOMICS

THE EFFECT OF FREQUENCY ON PSYCHOPHYSICAL RESPONSES TO LIFTING.

Introduction and review of literature

One of the primary functions of Ergonomics is that of task assessment, with the aim of setting task requirements within the determined safe capabilities of those who perform the task. This is of particular importance in Manual Materials Handling (MMH) tasks, as manual lifting represents a major cause of injury to workers and a significant cost to industry. Much research has focused on identifying particular areas of stress in MMH in order to minimise musculo-skeletal injuries, whilst at the same time not adversely affecting productivity. However, the high incidence of injury in industry provides evidence that the preventive aim of Ergonomics is not being fully realised. Back injury, particularly in the lower back, occurs with alarming frequency, with recent studies indicating that back injuries in industry are a major source of lost time and compensation claims, the majority of such injuries occurring as a result of lifting tasks (Ayoub 1992). Despite available guidelines such as NIOSH (1981) and Scott et al (1992), epidemiological evidence points to the fact that the majority of injuries are caused by overexertion. Lifting is a common MMH activity which results in overexertion injuries, and Gamberale et al (1987) report that one way to prevent injuries is via the application of restrictions on how much an individual is permitted to lift. In the past, much emphasis has been placed on Maximum Acceptable Workload (MAW), but recently Oborne (1987) and Charteris & Scott (1993) have argued that several task-related variables influence the demands of lifting. These include object size, shape and weight; the distance the object is to be moved; and lifting frequency. In line with the increasing realisation that the interaction of these factors is at least as important as the limitation on mass, this paper investigated the effect of frequency on MMH tasks.

Frequency forms a measure of the time dimension of a handling task, and refers to the pace associated with repetitive tasks (Ayoub & Mital 1989). Lifting frequency is defined as the number of times a lift is executed per minute, (Danz & Ayoub 1992). Ayoub & Mital (1989) report that frequency in a lifting task is proportional to heart rate, work rate, the Rating of Perceived Exertion (RPE), and metabolic energy expenditure. Legg et al (1984) state that it is of practical importance for industrial physiologists to quantify the relationships between load and lifting rate in order to establish the frequency which can be sustained without fatigue, and Zhu et al 1990 propose that when lifting weights ranging from 11-18 kg, efficiency is greatest at 5-6 lifts.min^{-1}. Frequency is thus increasingly being viewed as a critical task parameter in MMH activities, particularly where the rate of lifting exceeds 6.min^{-1} (Jiang & Smith 1985).

Some doubt has been cast as to the efficacy of a psychophysical evaluation of MMH tasks with high frequencies, with Karwowski et al (1992) stating that the application of psychophysical techniques leads to an overestimation of MAW for such tasks. They further state that the psychophysical approach should not be used to set lifting standards higher than 6 lifts.min^{-1}.

In actual industrial settings however, productivity often demands that frequency

exceeds 6 lifts.min^{-1}. Particularly in Southern Africa, where a large proportion of industrial work is manual in nature, there is thus a need to examine whether or not a psychophysical approach to MMH evaluation is valid and reliable. What however is the psychophysical approach, and how is it applied to Ergonomics?

Whilst a purely physiological approach to a work task focuses primarily on oxygen transportation and utilization systems, psychophysics deals with the relationship between human sensations and their physical stimuli. It is assumed that psychophysical strain is an integration of physiological and biomechanical stresses, and one of the advantages of this approach is that it permits the realistic simulation of industrial work. Ayoub (1992) however contends that still more integrated investigations are needed to accurately estimate the combined stresses imposed on the body during MMH activities.

Equating subjective feelings of effort with numerical values derived from a standardised scale has become increasingly common in research evaluating work tasks. Until fairly recently however, such tools have been less seriously considered than the more readily definable physiological indicators. The reason for this neglect is that subjective reactions have been difficult to define and measure (Gamberale 1985). These fundamental difficulties are connected with the nature of the measurement itself. As a privately experienced event or sensation, perceived exertion can only be measured indirectly through the use of self-report techniques. This self-report thus only constitutes a distal reaction, and the extent to which this is a reflection of the proximal reaction (i.e. the reaction within the individual organism) relies very heavily on the adequacy of the measurement tool or procedure adopted. (Olivier 1990). Despite its validity and reliability, and extensive use in research settings, the RPE scale is still underutilised in industry.

Numerous ratio- and category scaling techniques have been devised, the most commonly used being the Borg scale as revised in 1973 (Dunbar 1993). This scale is based on a correlation between perceived exertion and heart rate, with Borg (1973) suggesting that the addition of a zero to the RPE value should yield a figure which approximates the exercising subjects heart rate. This assumption has however been challenged (Pandolf et al 1972, Pandolf et al 1978, Mihevic 1981, Morgan 1981, Rejeski 1981, Pandolf 1982 and Robertson 1982). The achievement of a linear relationship between RPE and workload was in fact one of the objectives in the construction and development of the scale (Olivier 1990), and Borg himself (1982) cautioned that this close relationship ought not to be taken too literally.

There is no perfect scale for all kinds of subjective intensities in all kinds of situations, and different scales should be used depending on the purpose of the study. There is however general agreement (Morgan 1973, 1981, Mihevic 1981, Gamberale 1985) that the Borg scale should be used in most cases, as it has shown versatility, parsimony and validity. This is particularly true when there is a need to make comparisons between work tasks or between individuals (Olivier 1990). Despite its reliability & validity in certain situations and extensive use in research settings, the RPE scale is still underutilised in industry.

Pandolf (1978) suggests that the interrelationships between subjective perceptual ratings and specific physiological responses to various types of work can be better defined and compared using differentiated RPE. This makes provision for differentiating into Central, Local and Overall ratings.

The model suggests that undifferentiated RPE from the Borg category rating scale is probably associated with the "superordinate" level of subjective reporting, and represents overall body responsiveness that results from the integration of various sensory cues having different perceptual weightings. At this level of subjective reporting, undifferentiated RPE are not necessarily closely related to the underlying physiological substrata (Pandolf 1978, 1982). The model suggests that the interrelationships between subjective perceptual ratings and specific physiological responses to various types of work can be better defined and compared using "subordinate" differentiated ratings which appear to be in close proximity to the level of the "discrete symptoms" (Pandolf 1978). Put another way, the physiological substrata constitute the most basic level upon which the ratings of perceived exertion rest. Discrete symptoms arise from these cues and they are further tied to specific subordinate and/or ordinate levels of organisation. There is both a vertical hierarchy among levels and a horizontal interrelationship of categories within specific levels. The "superordinate" (undifferentiated) level is the most general level of subjective assessment and most closely approximates Borg's original measure of RPE. The link/process between the physiological substrata and the superordinate level is probably best characterised by reciprocal causation (Rejeski 1981). The model then encourages comparisons between local and central factors with further contrasts to the overall exertion (Noble and Allen 1984). Acceptance of this model for research presupposes that, as a result of the multidimensional nature of RPE, it is critical that researchers provide experimental subjects with specific instructions about the use of exertional scales (Rejeski 1981). Using Borg's category rating scale, subjects should be asked to indicate a "local" muscular rating from feelings of strain in the working muscles and joints, a "central" rating from sensations involving the cardiopulmonary systems, and an overall rating in which subjects can integrate the local and central feelings with whatever weightings they deem appropriate (Pandolf 1978).

Much of the work supporting the importance of central systemic factors as critical for perceived exertion has been directed towards validation of Borg's proposal that perceived exertion covaries directly with heart rate (Mihevic 1981). Numerous other studies have since demonstrated that under certain conditions there exists a strong linear relationship between the two variables (Pandolf 1972, 1978, Carton and Rhodes 1985). The majority of studies which support the influence of heart rate on perception of effort have been correlational in nature (Mihevic 1981), and consequently the relationship has not been investigated in cause and effect terms (Pandolf 1972). Therefore, while heart rate and RPE may be highly correlated, at no point has it been implied that the two variables are causally related (Carton and Rhodes 1985).

The research cited has demonstrated that the linear relationship of heart rate and perceived exertion across several exercise intensities is strong. However, the independence of heart rate and perceptual responses with pharmacological and

environmental manipulations suggests that heart rate is not a major input for perceived exertion. It must be remembered that the RPE scale was originally designed to follow the heart rate response to steadily increasing exercise intensity. The linear relationship between the two variables is therefore virtually inherent during progressive exercise under neutral conditions. Furthermore, heart rate and RPE are probably indirectly related through their common dependence upon physical strain (Carton & Rhodes 1985).

Classification of a response as a local factor for perceived exertion is based on the mediation of feelings of strain in the exercising muscles and joints. Amongst others, the following parameters have been identified as local factors which may provide sensory input for effort perception: lactate concentrations in the blood and muscles; Golgi tendon organ activity; and general muscle sensations (Mihevic, 1981). Pandolf (1982) however cautions against such neat categorisation by pointing out that many of those hypothesised factors signalling local effort would be nearly impossible to quantify truly. Early experiments showed that the peripheral component (local factors) stimulates the most robust sensory signal (Cafarelli, 1982).

Aims of the research

Manual lifting tasks in industry, and particularly those involving overexertion, result in a numerous injuries and the consequent loss of productivity. Although several restrictions have been proposed on how much an individual should be permitted to lift, comparatively few researchers have addressed the question of lifting frequency. In addition to physiological and mechanical aspects of work, it has been contended that what an individual thinks he is doing may be as important as what he is doing. This study is designed to investigate psychophysical (RPE) responses to a lifting task at three different frequencies. In order to simulate actual industrial conditions, task duration for each frequency will be one hour. Each of the conditions will also be subjected to NIOSH and LIFTRISK analysis. The primary question to be addressed is: are self-reports of exertion valid and reliable indicators of stress for manual materials handling tasks in a simulated industrial setting?

Methods

Utilising seventy male undergraduate Human Movement Studies students, the study will attempt to investigate psychophysical responses to a lifting task at three different frequencies, namely 10, 15 and 20 lifts per minute, with the total task duration being 60 minutes. Heart rate (HR) and differentiated Ratings of Perceived Exertion will be recorded. The tasks will be retrospectively analysed using NIOSH & LIFTRISK, in order to determine task inherent risks.

In an attempt to reduce subject variability, subjects will be between 20 and 25 years of age and between 170-180 cm in height. Stature, mass, grip strength and resting HR will be recorded at the original data collection.

Data will be collected at three test sessions spanning a period of ten days, with at least

one, but not more than three days interval between each session.

There seems to be a growing consensus that there is no ideal way to lift, with morphology and task requirements interacting to varying degrees. Subjects will therefore be instructed that a free lifting action is required, but they will be asked to lift as symmetrically as possible in order to eliminate twisting. Subjects will be required to lift a box weighing 15 kg from a pallet (15 cm high) onto a table 100 cm high) at regular intervals for all three tasks. The duration of each task will be one hour. The difficulty of extrapolation to, for example, an 8 hr shift from such a short period is recognised, but practical considerations and the inherent high risks of the tasks preclude longer testing sessions. Task requirements will be held constant except for frequency of lift, which will be as follows:

Condition 1 : 10 lifts.min^{-1} (1 lift every 6s)
Condition 2 : 15 lifts.min^{-1} (1 lift every 4s)
Condition 3 : 20 lifts.min^{-1} (1 lift every 3s)

These frequencies were chosen as it was felt that they would reflect the range encountered in 'real life' industrial settings.
The order of lifting frequency will be randomly assigned. Liftrate will be controlled by means of a pre-recorded tape indicating the appropriate moment at which to lift. Data will be collected during the last 10 seconds of each five minute interval of each task, with HR and differentiated RPE being recorded. Recovery HR will be recorded at minutes 1, 2 & 3 following termination of the work task.

Related students t-tests will be computed to determine whether there are significant differences between the conditions for HR, RPE Overall, central and local. One independent variable regression analyses will also be computed to examine possible correlations between HR & RPE.

The three conditions will also be subjected to NIOSH & LIFTRISK analysis.

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APPENDIX 6

REVIEW SHEET FOR RESEARCH PROPOSALS

Please comment on the attached postgraduate research proposal:

A: INTRODUCTION AND REVIEW OF LITERATURE

1.	Is the introduction relevant to the problem?	Y ☐ N ☐
2.	Is the literature relevant to the problem?	Y ☐ N ☐
3.	Is current literature cited?	Y ☐ N ☐
4.	Is the literature properly referenced?	Y ☐ N ☐

B: AIMS OF THE RESEARCH

5.	Is the problem worth investigating?	Y ☐ N ☐
6.	Are the aims clearly stated?	Y ☐ N ☐
7.	Are the aims consistent with the research design?	Y ☐ N ☐

C: METHODS AND PROCEDURES

8.	Is the description of methods and procedures clear enough to enable replication of the study?	Y ☐ N ☐
9.	Are the methods and procedures appropriate to the research design and aims of the project?	Y ☐ N ☐
10.	Are the measurement tools/instruments appropriate/adequate?	Y ☐ N ☐
11.	Is the proposed statistical treatment sufficient/adequate?	Y ☐ N ☐

D: GENERAL

Are there any omissions or problems with this postgraduate research proposal? (Please specify)

E: WOULD YOU AS A SUPERVISOR

☐ accept ☐ reject ☐ accept with revision

this proposal as a postgraduate research proposal in your department? (Please comment if necessary)

APPENDIX 7

BIOGRAPHICAL QUESTIONNAIRE: RESEARCH PROPOSALS

PERSONAL INFORMATION

Name: ..... Age: .....

Rank/Position (e.g. Lecturer, Professor, Head of Dept. etc)

.....

Highest Educational Qualification, and place obtained:

.....

Institution to which you are affiliated: .....

Number of postgraduate theses/projects supervised: .....

Number of refereed articles published in the last five years:

.....

Indicate your area/s of expertise (rank if necessary):

	Exercise Physiology
	Measurement and Evaluation
	Biomechanics
	Kinanthropometry
	Perceptual & Motor Learning
	Adapted Physical Activity
	Movement Psychology
	Sports Sociology
	Leisure/Recreation
	Health Education
	Ergonomics
	Dance
	Sports Medicine
	History of Physical Education
	Sport and Leisure Management
	Philosophy of Human Movement

	Other (Please specify)

APPENDIX 8

COVERING LETTER: RESEARCH PROPOSALS

Dumques2

Dear Colleague

Participation In Research Project

This letter serves to request your participation in a PhD research project titled "Responses to postgraduate research proposals in Human Movement Studies". As the title implies, the project will attempt to assess responses, from professionals in HMS & allied disciplines, regarding the adequacy of selected research proposals. As such the research is primarily targeted at members of staff at academic institutions or research institutes.

You will be asked to provide biographical information, read one or more research proposal/s, and comment on their adequacy as per the evaluation document/s. You are welcome to comment on every proposal. **However, should you wish to restrict your comments to your area/s of expertise, please feel free to comment only on the relevant research proposal/s.**

All biographical and comment information will be kept strictly confidential. The only persons with access to the information will be myself and Prof J Charteris (Head: HMS Dept, Rhodes University). If the data are published, no names or institutions will be used. Participants will be furnished with a report on the research.

Your assistance with this project would be much appreciated. Please send your reply to the address below as soon as possible.

Yours sincerely

Steve Olivier
Senior Lecturer : HMS Dept
University of Zululand
P/Bag X1001
KwaDlangezwa
3886
South Africa

Telefax : 27-351-93916
e-mail : solivier@pan.uzulu.ac.za

APPENDIX 9

QUESTIONNAIRE TO HEADS OF DEPARTMENTS

1 **Name:**			
2 **Position:**			
3 **Department:**			
4 **Institution:**			
Please tick the appropriate box	Y	N	N/A
5 Are your departmental practices/duties/research activities regulated by a formal Code of Ethics.?			
6 Does your institution/department have procedural guidelines governing research involving human subjects?			
7 Does your institution/department have guidelines governing the obtaining of informed consent?			
8 Does your institution/department have formally constituted ethical review boards?			
9 Are you formally required to present research proposals emanating from your department to an ethical review board?			
10 If the answer to question 9 was **YES**, during the past five years (or for any period of time that you can provide detail on), (a) how many graduate project proposals has your Department submitted to this committee ..... (b) how many of those have been returned for modification and resubmission..... (c) how many were rejected outright ..... Please note that the reasons for returns etc here refer only to projects requiring modification or rejection on ethical grounds. **If you have no figures available, please provide estimates.**	_ _ _	_ _ _	_ _ _
11 If a researcher does not agree with modifications/changes suggested by this committee, does he/she have recourse to an appeal procedure?	_	_	_
12 In your position as Head of Department, during the past five years (or for any period that you can comment on), (a) how many graduate project projects have been submitted to you for approval..... (b)how many of those have you returned for modification and resubmission..... (c) how many were rejected outright ..... Please note that the reasons for returns etc here refer only to projects requiring modification or rejection on ethical grounds. **If you have no figures available, please provide estimates.**	_ _ _	_ _ _	_ _ _
13 During the past five years (or for any period you can comment on), within the population of research subjects utilised by your department, have any injuries (including psychological conditions requiring treatment) occurred which could be attributed to the conduct of the experimental regimen?..... If you have no details regarding number of incidents, please provide an estimate on a separate page. Also, please describe the cause of each injury and categorize each for seriousness, e.g. trivial, temporarily disabling, permanently disabling, fatal.	_	_	_
14 Does your institution/department teach any specific courses on ethical issues in research? (eg ethical issues in human experimentation, scientific fraud and misconduct etc). Please provide details such as course or sub-course titles in the space below:			

15 Are these full courses, i.e. autonomous courses?			
16 Are these sub-courses, i.e. is ethics taught within the framework of other courses?			
17 If your institution/department does offer a specific course in ethical issues in research, is it compulsory for (a) all undergraduate students ..... (b) all postgraduate students	 _ _	 _ _	 _ _
18 Are these courses taught by members of your department?			
19 Are these courses taught by outside lecturers e.g. from the Philosophy Dept?			
20 If the courses are taught by members of your department, do they have formal Philosophy academic qualifications?			
21 If your department does not offer courses in ethics, what is the rationale for their absence in the curriculum? Please specify which of these reasons are applicable to your department: (a) lack of interest by students ..... (b) lack of interest by faculty ..... (c) lack of qualified faculty..... (d) the teaching of ethics is a component of other courses in the degree .... (e) any other reasons. (Please specify)	 _ _ _ _	 _ _ _ _	 _ _ _ _
22 If your institution/department presently does not offer a course in ethical issues in research are there plans to implement one?			
23 Does your institution/department have any guidelines regarding the use of students as research subjects?			
24 Does your institution/department have any guidelines regarding the use of children as research subjects?			
25 Does your institution/department have any guidelines regarding research methodology involving deception or concealment?			
26 Do you have specific institutional/departmental guidelines governing ethical issues in transcultural research?			
27 Is research in your institution/department subject to regulations regarding the use of animals in research?			
28 Does your institution/department have procedural guidelines governing scientific misconduct and fraud?			
29 During the past five years, have any incidents of scientific misconduct occurred in your department? (eg falsification, fabrication, fraud etc. If possible please provide details of incidents and action taken on a separate page).			
30 Any other comments you wish to make.			

APPENDIX 10

COVERING LETTER TO HEADS OF DEPARTMENTS

Survlet1

1 August 1996

Dear Colleague

This letter serves to request your participation in my PhD research titled "Ethical issues in human movement studies." The principle aim is to assess current ethical practices and trends in Human Movement Studies. Consequently, you are asked to complete the attached, self-explanatory questionnaire.

All information will be kept strictly confidential. The only persons who will have access to the data will be my supervisor and I. If the data are published in journals, no names, institutions, or any identifying characteristics will be used. On request, participants will be furnished with a report on the research.

I believe that the research will benefit Human Movement Studies, and your participation will contribute towards making the project worthwhile. Due to time constraints, I would appreciate it if you would complete the questionnaire as soon as possible, and return it to me by mail, at the above address.

Thank you

Yours sincerely

Steve Olivier : Senior Lecturer
e-mail : solivier@pan.uzulu.ac.za
fax : 0351-93916

APPENDIX 11

CONTINGENCY TABLE AND CHI-SQUARE COMPUTATIONS

Chi-Square Goodness of Fit Tests

Figure 6

Observed Frequency	Expected Frequency	Chi-Square
12	19	2.76
39	19	20.11
7	19	7.84

Chi-square = 30.7083 with 2 d.f.
Sig. level = 2.14674E-7

Figure 8

Observed Frequency	Expected Frequency	Chi-Square
22	20	.142
32	20	6.743
7	20	8.714

Chi-square = 15.5995 with 2 d.f.
Sig. level = 4.09836E-4

Figure 10

Observed Frequency	Expected Frequency	Chi-Square
21	12	6.750
14	12	.333
1	12	10.083

Chi-square = 17.1667 with 2 d.f.
Sig. level = 1.872E-4

Figure 12

Observed Frequency	Expected Frequency	Chi-Square
16	15	.115
24	15	5.884
4	15	7.788

Chi-square = 13.7871 with 2 d.f.
Sig. level = 1.01432E-3

Figure 14

Observed Frequency	Expected Frequency	Chi-Square
28	14	14.926
11	14	.532
2	14	9.992

Chi-square = 25.4504 with 2 d.f.
Sig. level = 2.97525E-6

Figure 17

Summary Statistics for Contingency Tables

Chi-square	D.F.	Significance
160.862	4	0.00000

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.27762	0.17507	0.40193
Uncertainty Coeff.	0.11981	0.09079	0.17611
Somer's D	0.40599	0.48349	0.34991

Statistic	Value	Significance
Contingency Coeff.	0.43227	
Cramer's V	0.47938	
Conditional Gamma	0.64494	
Kendall's Tau B	0.41131	0.00000
Kendall's Tau C	0.47749	

Table xiii(a)

Chi-square	D.F.	Significance
3.67200	1	0.0553337
1.33491	1	0.247933 with Yates correction

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.16667	0.20000	0.00000
Uncertainty Coeff.	0.17053	0.11942	0.29811
Somer's D	-0.30909	-0.68000	-0.20000

Statistic	Value	Significance
Contingency Coeff.	0.34600	
Cramer's V	0.36878	
Conditional Gamma	-0.00000	
Kendall's Tau B	-0.36878	0.06005
Kendall's Tau C	-0.18656	
Fisher's Exact Test		0.12821 (one tail)
		0.12821 (two-tail)

Table xiii(b)

Chi-square	D.F.	Significance
3.16080	1	0.0754263
1.79956	1	0.179765 with Yates correction

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.11111	0.20000	0.00000
Uncertainty Coeff.	0.09088	0.08733	0.09473
Somer's D	-0.34161	-0.36184	-0.32353

Statistic	Value	Significance
Contingency Coeff.	0.32373	
Cramer's V	0.34215	
Conditional Gamma	-0.64706	
Kendall's Tau B	-0.34215	0.08105
Kendall's Tau C	-0.30178	
Fisher's Exact Test		0.09099 (one tail)
		0.10194 (two-tail)

Figure xv(a)

Chi-square	D.F.	Significance
1.27059	1	0.259656
0.496324	1	0.481120 with Yates correction

WARNING: Expected values in 1 cells ⟨ 5 and 0 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.00000	0.00000	0.00000
Uncertainty Coeff.	0.03799	0.03733	0.03866
Somer's D	0.21687	0.22222	0.21176

Statistic	Value	Significance
Contingency Coeff.	0.21200	
Cramer's V	0.21693	
Conditional Gamma	0.47368	
Kendall's Tau B	0.21693	0.26867
Kendall's Tau C	0.19753	
Fisher's Exact Test		0.24378 (one tail) 0.48757 (two-tail)

Table xv(b)

Chi-square	D.F.	Significance
5.55882	1	0.0183878
3.62146	1	0.0570388 with Yates correction

WARNING: Expected values in 2 cells ⟨ 5 and 2 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.00000	0.00000	0.00000
Uncertainty Coeff.	0.23665	0.22106	0.25461
Somer's D	-0.45161	-0.50000	-0.41176

Statistic	Value	Significance
Contingency Coeff.	0.41320	
Cramer's V	0.45374	
Conditional Gamma	-1.00000	
Kendall's Tau B	-0.45374	0.02069
Kendall's Tau C	0.38409	
Fisher's Exact Test		0.02190 (one tail) 0.02606 (two-tail)

Table xv(c)

Chi-square	D.F.	Significance
4.79307	1	0.0285745
3.00886	1	0.0828108 with Yates correction

WARNING: Expected values in 2 cells ⟨ 5 and 0 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.17647	0.30000	0.00000
Uncertainty Coeff.	0.14211	0.13275	0.15290
Somer's D	0.41935	0.46429	0.38235

Statistic	Value	Significance
Contingency Coeff.	0.38828	
Cramer's V	0.42133	
Conditional Gamma	0.76471	
Kendall's Tau B	0.42133	0.03168
Kendall's Tau C	0.35665	
Fisher's Exact Test		0.04275 (one tail) 0.06465 (two-tail)

Table xvi(a)

Chi-square	D.F.	Significance
2.90420	1	0.0883490
1.50032	1	0.220623 with Yates correction

WARNING: Expected values in 2 cells ⟨ 5 and 0 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.12500	0.20000	0.00000
Uncertainty Coeff.	0.08813	0.07947	0.09889
Somer's D	-0.32432	-0.38095	-0.28235

Statistic	Value	Significance
Contingency Coeff.	0.31164	
Cramer's V	0.32797	
Conditional Gamma	-0.66667	
Kendall's Tau B	-0.32797	0.09446
Kendell's Tau C	-0.26337	
Fisher's Exact Test		0.11167 (one tail) 0.15347 (two-tail)

Table xvi (b)

Chi-square	D.F.	Significance
7.98261	1	4.72288E-3
5.12767	1	0.0235473 with Yates correction

WARNING:Expected values in 2 cells ⟨ 5 and 1 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.28571	0.40000	0.00000
Uncertainty Coeff.	0.31562	0.25824	0.40578
Somer's D	-0.51908	-0.73913	-0.40000

Statistic	Value	Significance
Contingency Coeff.	0.47769	
Cramer's V	0.54374	
Conditional Gamma	-1.00000	
Kendall's Tau B	-0.54374	0.00556
Kendall's Tau C	-0.37311	
Fisher's Exact Test		0.01197 (one tail)
		0.01197 (two-tail)

Table xvi(c)

Chi-square	D.F.	Significance
2.90198	1	0.0884707
1.30555	1	0.253203 with Yates correction

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.14286	0.20000	0.00000
Uncertainty Coeff.	0.09712	0.07946	0.12486
Somer's D	-0.31298	-0.44565	-0.24118

Statistic	Value	Significance
Contingency Coeff.	0.31153	
Cramer's V	0.32784	
Conditional Gamma	-0.74545	
Kendall's Tau B	-0.32784	0.09459
Kendall's Tau C	-0.22497	
Fisher's Exact Test		0.12821(one tail)
		0.12821(two-tail)

Table xvi (d)

Chi-square	D.F.	Significance
0.564004	1	0.452651
0.119343	1	0.729748 with Yates correction

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.00000	0.00000	0.00000
Uncertainty Coeff.	0.01557	0.01577	0.01538
Somer's D	-0.14451	-0.14205	-0.14706

Statistic	Value	Significance
Contingency Coeff.	0.14304	
Cramer's V	0.14453	
Conditional Gamma	-0.29412	
Kendall's Tau B	-0.14453	0.46114
Kendall's Tau C	-0.13717	
Fisher's Exact Test		0.36323 (one tail)
		0.68675 (two-tail)

Table xvi(e)

Chi-square	D.F.	Significance
4.85711	1	0.0275324
2.85918	1	0.0908535 with Yates correction

WARNING: Expected values in 2 cells ⟨ 5 and 1 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.20000	0.30000	0.00000
Uncertainty Coeff.	0.15645	0.13509	0.18583
Somer's D	-0.41429	-0.52727	-0.34118

Statistic	Value	Significance
Contingency Coeff.	0.39047	
Cramer's V	0.42414	
Conditional Gamma	-0.82857	
Kendall's Tau B	-0.42414	0.03056
Kendall's Tau C	-0.31824	
Fisher's Exact Test		0.04734 (one tail)
		0.04734 (two-tail)

Table xvi (f)

Chi-square	D.F.	Significance
0.338363	1	0.560776
4.31586E-4	1	0.983425 with Yates correction

WARNING: Expected values in 2 cells ⟨ 5 and 1 cells ⟨ 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.00000	0.00000	0.00000
Uncertainty Coeff.	0.01129	0.00924	0.01452
Somer's D	-0.10687	-0.15217	-0.08235

Statistic	Value	Significance
Contingency Coeff.	0.11125	
Cramer's V	0.11195	
Conditional Gamma	-0.30435	
Kendall's Tau B	-0.11195	0.56812
Kendall's Tau C	-0.07682	
Fisher's Exact Test		0.47692 (one tail) 0.61254 (two-tail)

APPENDIX 12

RAW DATA: JOURNAL SEARCH

Jsearch1

Journal^	No of papers	Consent Appropriate	Consent Reported	%
Int J of Phys Ed 26(1)1989-28(4)1991	45	14	0.00	0.00
J Sp & Ex Psy 17(1)1995-17(4)1995	28	22	11	50
Sp Psychologist 9(1)1995-9(3)1995	22	14	2	14.29
J Appl Ergonomics 26(1)1995-26(6)1995	48	27	5	18.52
J Appl Biomechanics 11(1)1995-12(1)1996	39	22	6	27.27
Med Sci Sp & Ex + 28(1)1996-28(5)1996	95	60	56	93.33
Research Quarterly for Ex & Sp + 66(1)1995-66(4)1995	38	27	21	77.77
Human Movement Science + 14(3)1995-15(2)1996	33	19	7	36.84
J Sp Med & Physical Fitness # 35(1)1995-35(4)1995	45	40	31	77.5
SA Med J 84(1)1994-84(10)1994	102	42	9	21.43
SA J for Research in Sport, PE & Rec * 5(1) 1982 -17(1)1994	207	113	14	12.39
Ergonomics SA 1(2)1989-5(1)1995	30	20	1	5
SA J Sp Med * 5(1)1990-3(1)1996	79	13	9	69.23
Proceedings,20th Biennial National/ International ACHPER Conf Jan 1996	74	14	3	21.43
Proceedings, 1st African Regional Conf on Phys Ed, Rec & Dance, 1994	41	18	3	16.66
African J Phys, Health Ed Rec & Dance 1(1)1995-2(1)1996	28	14	2	7.14
Proceedings of Symposium, 13th Int Congress of Anthro & Ethno Sciences, ed Parizkova, 1993	14	12	3	25
J Appl Physiology 80(6) 1996-81(1)1996	115	40	30	75

Canadian J Appl Physiology 19(1)-(4)1994	31	20	19	95
SA J of Food Sc & Nutrition 5(1) 1993	43	19	11	57.89
Int J of Sp Nutrition 4(1)-(4) 1994	31	18	14	77.78
Aus J of Sc & Med in Sp 22(4)1990-26(2)1994	67	44	24	54.55
Adapted Phys Activity Quarterly 13(1)-(3) 1996	20	12	9	75
J of Human Movt Studies 30(1)-(6) 1996	16	15	8	53.33
J of Teaching in Phys Ed # 15(1)-(4) 1994	26	18	8	44.44
J Motor Beh 27(3)-28(2) 1995-1996	30	26	8	30.77

^See Table IV for full journal titles

*Incomplete collection of journals

+Consent statement is a publication requirement

#Requires adherence to ethical procedures