

Practising Appropriate Ethics in Exercise and Sport Science Research 探討運動體育科學研究的道德規範

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Abstract

This commentary paper addresses the principal issues in practicing appropriate ethics in research in exercise and sport science. Ethical considerations include the suitability of the research question, appropriate research design and statistical analysis and the presentation and publication of the research findings. Special mention is given to research involving young people and the need to be aware of cultural and religious sensitivities.

摘要

本文簡要探討運動和體育科學研究的道德規範。所討論的五大標題包括研究目標和假設，研究方法，統計過程，研究報告與論文發表。其重點是著重在以青少年為研究對象的研究。

Introduction

As research interest in exercise and sports science is gaining attention in many countries in Asia, there are concerns that ethical practice when conducting research that involve human participants among exercise scientists may be compromised. While the medical profession has a strong code of conduct or ethical practice in the form of the Hippocratic Oath (Veatch, 1995), which is enforced by medical associations, apparently there is the absence of such a universally accepted Oath in the conduct of exercise and sports science research.

Researchers are therefore reliant on ethics committees within institutions to be the gatekeepers of the code of ethics for conducting research that involve adults and young people. In the main, the role of the ethics committee is to provide greater impartiality and objectivity that is independent of the researcher, and also to act as an advocate for the interests and needs of participants, especially young people who might not be in a position to appropriately gauge the risks and benefits of taking part in the research.

In essence, ethics committees within institutions in reviewing research applications pay attention to the following: suitability of the research question, appropriateness of the research design and appropriate statistical analysis, and presentation and publication of data. Additionally, related questionnaires, informed consent forms, indemnity forms and assent forms for pupils are also required attachments (PESS, 2000). It is worth noting that indemnity forms do not totally absolve the research team or the institution that conducts the research where harm to participants is caused by negligence.

Research Question Suitability

Phrasing of the Hypothesis

In research, how the hypothesis is phrased is important. In qualitative research, most investigators recognise that the answers to survey questions about lifestyle and physical activity depend on the nuances and context in the way questions are asked. However, few researchers would admit that the same criticisms apply to research questions that researchers pose when investigating health and wellness habits of young people.

For example researchers often associate juvenile obesity to low levels of habitual physical activity. Many investigators attribute blame to the overweight youngster for being physically inactive. While the evidence for cause-and-effect between inadequate physical activity and juvenile obesity can be demonstrated, other less popular hypotheses should also be tested. For instance, in the cited example, an alternative research question that could be conceived could be how far has the school environment contributed to the lack of physical activity among young people? Are the barriers to physical activity in school greater than the inducements for increasing physical activity? Is the school environment physical activity-friendly? Results that emanate from such studies will help address school rules, regulations and policies which indirectly go against what the school is trying to promote, namely getting overweight pupils to be more physically active.

Are the Research Findings Generalisable?

One often overlooked issue in research is whether the findings of a particular study can be applied to the entire population? It is not uncommon for researchers to study the physical activity of boys and then make statements about the implications of the findings to the entire school-going population. This is not only careless but also leaves unanswered questions about the physical activity of girls, the overweight and the underweight pupils. Even in studies where females were recruited, only a fifth of the studies have addressed sex differences in the results (Marrococo & Stewart, 2001).

Some Alternative Questions about Age and Sex Differences

The extant literature is replete with information about levels of physical activity declining with age, and sex differences in strength, power and aerobic fitness are widely accepted. Researchers should be mindful that the differences may not be as important as researching the alternative questions as to how much physical fitness in terms of strength, power and aerobic fitness are required by boys and girls in performing the daily requirements of school and out-of-school activities. And how much physical activity and physical fitness are required for good health as a person advances in age? In other words, it is important to match physical fitness and physical activity measures with functional performance and indicators of good health in the context of daily living that is sex and age-appropriate.

Appropriateness of the Research Design

Cost-benefit Comparison of the Research

First and foremost, the safety of participants involved in research must be assured. In the context of exercise and sports science, the ethics review committee should be provided with information about the risks of muscle-skeletal injury, sudden death or heat stress and the level of medical supervision and the extent and provision that are made for emergency evacuation.

How useful is the investigation is also a related issue (Savulescu, Chalmers & Blunt, 1996). For instance, it would be unethical to take the time of participants in a study without first ascertaining by a thorough search of the literature that the investigation is worth undertaking, that is, the investigation will help answer a specific question that is not available from previous research. It is also unacceptable to conduct the study if the design of the study is weak (e.g. absence of a control group, inappropriate use of instruments of measurement, lack of control for confounding variables, inappropriate statistical techniques) or inadequate sample size (i.e. low power of the test) preclude the obtaining of useful data.

The benefits to the participant and the outcomes of the study or its practical or academic significance must also be spelt out. Moreover, the principal investigator must neither understate the cost (e.g. time commitment, physical discomfort or risk of injury) nor inflate the benefits (e.g. improved physical fitness or sports performance) of participating in the study.

Confidentiality

Investigations into lifestyle habits often require participants to complete questionnaires on aspects such as physical activity patterns, managing stress, smoking, alcohol and drug consumption and even sexual habits. With participant consent, the collection of such data is usually appropriate but the data must be held in strict confidence.

Open disclosure of at risk behaviours of individual participants must be avoided unless it is required by law or when it is necessary to prevent harm to the individual (Kleinman *et al*, 1997). Even then, the disclosure should only be made to authorized personnel. The same should apply to exercise physiology testing but exceptions are allowed where hypertension, diabetes, hypercholesterolemia or cardiac abnormalities are identified. In motor learning research, maintaining confidentiality of individuals who are identified as slow learners or clumsy children will guard against teasing from peers.

Increasingly, the use of the internet to garner questionnaire data poses new challenges to maintaining the confidentiality of data collected on human participants (Singer, 2000). This must be managed somehow with security features that guard confidentiality and limits access to the data collected.

Informed Consent

Informed consent is a prerequisite for human experimentation. Ensuring informed consent requires providing clear, age and language appropriate and gender-neutral information about the objectives of the investigation (outlining the procedures), full disclosure of risks of participation, competence of the participant to understand the risks involved and the avoidance of excessive pressure or incentives (e.g. monetary or in kind) to accept such risks. The informed consent should also include a statement that the data collected is confidential, how the data will be used and who has access to the data.

When dealing with children, the situation is more complex. For instance, in different countries, the legal age of consent is different. In Singapore, the legal age of consent is 21 years old while in the UK it is 18 years old. Interestingly, in the UK, in research with therapeutic benefits, a participant who has reached the age of 16 years can give informed consent. Participants below the legal age of consent, apart from agreeing to take part in the study must also have parental or guardian consent, and in the case where research is conducted in school, the consent of the principal must also be sought.

Consent is further complicated when parents or school principals think that it is useful for children to take part in particular research projects, without first discussing the research projects with them. To overcome these forms of coercion, assent forms signed by the youngster are a necessity. If children decline participation, even when participation is considered desirable by parents and the school authorities, this should be allowed. In situations where the research is longitudinal in nature, it is important to acknowledge the growing autonomy of adolescence, and certainly to allow an age-appropriate increase in involvement in the decision-making process (Harrison *et al.*, 1997). Additionally, researchers must be fully aware of cultural and religious sensitivities.

Another issue that might be peculiar to certain Asian societies is the compliant nature of the people. Compliance to the instructions of those in positions of power does not mean that participants have given consent to participate, especially when they were not given the choice to do otherwise. Research or surveys dictated by authorities to glean certain forms of information should be voluntary, should not be merely stated as official business or as part of work and should also go

through the process of ethical clearance from independent institutions. There should be clause in any survey or research stating that participants are free not to participate without any dire consequences. Additionally, a clear statement about the freedom to withdraw from the project at any point during the research process without any penalty is also helpful.

Desirability of Placebo Trials

In experimental research, the efficacy of certain treatment is usually ascertained when improvements of participants in the treatment group are compared to appropriately matched participants in the control or placebo group. Given that we now know a lot about the health benefits of exercise (Chia, Leong & Quek, 2002) the practice of instructing the control or placebo group to refrain from exercise or to take an ineffectual dose of exercise is controversial. It would appear unethical to withhold the benefits of exercise from any group.

To overcome this issue, researchers could offer the control or placebo group an equivalent exercise programme or treatment intervention that is similar to that given to the treatment group at the start of the study. Alternatively, the researcher could consider using a cross-over design: the groups each receive treatment and no treatment, but in a different order.

Another aspect of conducting experimental research that need to be reinforced is that researchers should debrief the participants after the data collection period. This reinforces the point that participants are partners in the research process and allows for questions and clarifications to be attended to.

Presentation and Data Publication

Having completed the research, investigators must be encouraged to present and publish the results of the investigation in a responsible manner. When research findings are reported, researchers need to ensure that there are no major errors in the data being published. Indeed, institutions should make it conditional that all funded research should be published in a peer-refereed journal or the results of the research be presented at a conference. The maxim that research findings that remain unpublished do not exist holds true since the information is not available to the scientific community and it is also inaccessible to fellow researchers.

In publishing the research, in addition to appropriate institutional review of ethics in conducting the research, there must be adequate evaluation of previous research in the area, competent design and statistical analysis, fair and clear presentation of the data, a just attribution of authorship, avoidance of publication bias and the acknowledgement of any conflicts of interest.

Good Research Practices When Dealing with Young People

There are special considerations that are noteworthy when testing or working with young people. Importantly, prior to conducting any child-related research, ensure that the investigation is worthwhile and will contribute to the specific knowledge base, identify all potential risks and minimize or eliminate them.

These following practices are helpful in ensuring not only ethical practice but also ensure that the research experience is educational and meaningful for young participants and paediatric exercise researchers.

- Obtained signed consent forms from parents/guardians/school principals and assent forms from young people up to the legal age of consent.
- Ensure that the forms are easy to understand, are free from gender-bias and that the language used is age-appropriate. Remember that reading ages can vary so do not assume that all children will understand.
- Organise a session whereby the research is explained to the young participants. Use videos and pictures to show the equipment that will be used. Include action pictures where other children are seen using the equipment (e.g. running on the treadmill or cycling on an ergometer) or where the equipment is used on children (e.g. heart-rate monitors or pedometers). Where possible bring the equipment to the session.
- Organise an opportunity for parents/guardians and children to visit the laboratory where the research will be conducted to meet with the investigators, and to ask questions.
- Treat young people as partners in the research process and not as laboratory animals. When administering questionnaires, speak to young people with respect.
- Make sure that all equipment and method used are appropriate for paediatric testing. Remember that children are not adults-in-miniature in shape, form and constitution.
- Make visits to the laboratory interesting and educational. Parents and school principals are more willing to give consent when they know that children are learning a new experience. Share the results obtained with the school or the class, explaining the findings in terms that they can understand and relate to.
- Make the visit fun. Play educational videos or have child-centred activities for children when they are waiting to be tested.
- Organise workshops in schools after the research is completed to explain the findings of the investigation to pupils, teachers and the school principal demonstrates goodwill and reinforces the view that participants are partners in the research process.

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