SINGAPORE SPORTS INSTITUTE INSTITUTIONAL REVIEW BOARD – Human Biological Research and Sample

1. Introduction

1.1. These guidelines apply to all research involving human subjects, that is supported by, in collaboration with, the Singapore Sports Institute.

1.2. All Human Biomedical research conducted in Singapore is governed by the Human Biomedical Research Act (HBRA) 2015. This is to protect the safety and welfare of research subjects, ensuring that their health and well-being is not compromised, and their privacy and autonomy is respected. It is mandatory for any proposed human biomedical research to undergo review and be approved or exempted by an Institutional Review Board (IRB).

1.3. Research is considered invasive if it involves any procedure that is incisional, i.e. cutting into the tissue of the body. Examples of invasive procedures include (but not limited to) finger-prick blood test and skin-prick test.

1.4. Principal Investigators should clearly consider the risk level the participant faces (in comparison to the daily level of risk the participant is exposed to) when including blood sample collection of any type in the proposed research methodology.

1.5. Blood samples can be collected from human research subjects via finger prick, heel prick, ear prick, or by venipuncture. In most projects, venipuncture is the most common method.

1.6. Informed consent must be obtained from the research subjects before any blood is taken. The informed consent should include the method by which blood will be obtained, amount and frequency of blood taken at each visit, and the total amount of blood taken. Any risks and discomforts caused by the collection of blood should also be included in the patient's information sheet.

2. Certification requirement for researchers

2.1. All researchers are required to have Collaborative Institutional Training Initiative (CITI) certification or Good Clinical Practice (GCP) if their names are included in the IRB application form.

2.2. GCP certification has no expiry date, but researchers are required to attend refresher course every 2 years.

3. Guidelines for Human Biological Research

3.1. Research will fall within the scope of the HBRA if it has certain intended purposes and involves certain methodologies, or where it involves sensitive research[1]:

3.1.1. Any research that is intended to study –

[1] *Ref: Human Biomedical Research Act 2015, Part 1, Section 3*

a) the prevention, prognostication, diagnosis or alleviation of any disease, disorder or injury affecting the human body;

b) the restoration, maintenance or promotion of the aesthetic appearance of human individuals though clinical procedures or techniques; or

c) the performance or endurance of human individuals,

where the research involves –

I) subjecting an individual to any intervention (including any willful act or omission) that has a physical, mental or physiological effect (whether temporary or permanent) on the body of the individual;

II) the use of any individually-identifiable human biological material; or

III) the use of any individually-identifiable health information.

3.1.2. Any research that involves –

a) human gametes or human embryos;

b) cytoplasmic hybrid embryos;

c) the introduction of any human-animal combination embryo into an animal or a human;

d) the introduction of human stem cells (including induced pluripotent stem cells) or human neural cells into an animal at any stage of development (including a prenatal animal foetus or animal embryo); or

e) any entity created as a result of any process referred to in paragraphs (c) or (d).

3.2. Research, studies and matters that are excluded from the definition of Human Biomedical research are as follows[2]:

3.2.1. Research and studies on normal human psychological responses and behaviors –

a) Which are not designed or intended to study psychiatric or psychological disorders; and

b) Which involve no more than minimal risk to the research subject.

3.2.2. Research, studies and tests to measure human intelligence –

a) Which are not designed or intended to study mental or intellectual disability; and

b) Which involve no more than minimal risk to the research subject.

3.2.3. National public health research as defined in and conducted in accordance with section 59A of the Infectious Diseases Act.

3.2.4. Collection and compilation by the National Registry of Diseases of health information for epidemiological or statistical purposes in accordance with the National Registry of Diseases Act.

3.2.5. Collection and compilation of health information for statistical purposes in accordance with the Statistics Act.

3.2.6. Clinical trials of health products conducted in accordance with the Health Products Act.

[2] *Ref: Human Biomedical Research Act 2015, Second Schedule*

3.2.7. Clinical trials of medicinal products conducted in accordance with the Medicines Act.

3.3. Human biomedical research can only be conducted under the supervision and control of a research institution with[3] –

3.3.1. a place of business in Singapore; and

3.3.2. at least 2 individuals ordinarily resident in Singapore who are responsible on behalf of the research institution for the supervision and control of the biomedical research.

3.4. In order to conduct any biomedical research, researcher must first comply with all the following requirements:

3.4.1. Researcher has made the necessary contractual or other arrangements with a research institution referred to in **section 2.3** for the proposed research to be conducted under the supervision and control of the research institution;

3.4.2. Researcher has ensured that the proposed research has been –

a) reviewed and approved by an institutional review board appointed by the research institution referred in **section 2.4.1**; or

b) exempted from review by an institutional review board.

3.4.3. Researcher has ensured that, where the human biomedical research involves human gametes or embryos, whether individually-identifiable or not, the appropriate consent must be obtained from the research subject or donor who has capacity to give consent in person.

3.5. A researcher must ensure that –

3.5.1. the research does not deviate from the research proposal that has been reviewed and approved or exempted from review by an institutional review board unless the deviation —

a) has been reviewed and approved, or otherwise exempted from review, by the institutional review board; or

b) is necessary to mitigate an immediate risk of harm to a research subject and the researcher without unreasonable delay informs the institutional review board of the deviation;

3.5.2. any research is immediately discontinued if the institutional review board has withdrawn its approval for the research unless the immediate discontinuation will result in a risk of harm to the research subject;

3.5.3. the further participation of the research subject or further use of the individually-identifiable biological material or health information of the research subject is immediately discontinued if the consent has been withdrawn or is otherwise invalid unless the immediate discontinuation will result in a risk of harm to the research subject; and

3.5.4. all such appropriate and necessary measures are taken to mitigate any risk of harm that has arisen under **section 2.5.2 and 2.5.3**.

3.6. A researcher must ensure that a minor who lacks sufficient understanding and intelligence, or an adult or minor who lacks mental capacity to give consent, must not be a research

[3] *Ref: Human Biomedical Research Act 2015, Part 5, Section 22*

subject in any biomedical research unless there are reasonable grounds for believing that biomedical research of comparable effectiveness cannot be carried out without the participation of the class of persons to which the minor or adult belongs, as the case may be.

3.7. To avoid doubt, the delegation of any obligation or duty under this Act to another person or service provider under a contract or other arrangement does not absolve or relieve the person of any of his or her obligations or duties under this Act.

3.8. The Human Biomedical Research Act (HBRA) requires all expected and unexpected Serious Adverse Events (SAEs) to be reported to the Research Institution. In relation to human biological research, SAE refers to any untoward medical occurrence as a result of any human biomedical research which[4]:

a) Results in or contributes to death;
b) Is life-threatening;
c) Requires in-patient hospitalization or prolongation of existing hospitalization;
d) Results in or contributes to persistent or significant disability or incapacity;
e) Results in or contributes to a congenital anomaly or birth defect; or
f) Results in such other events as may be prescribed.

4. Guidelines for Biological Sample Collection

4.1. The Department of Health and Human Services, National Institute of Health, USA, has the following guidelines in terms of the volume of blood taken from research subjects[5]:

4.2. Healthy, non-pregnant adults who weigh at least 110 pounds (50 kg). For these subjects, the amounts drawn may not exceed **550 m**l in an 8 week period and collection may not occur more frequently than 2 times per week; or

4.3. Other adults and children[6], considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of **50 ml** or **3 ml per kg** in an 8 week period and collection may not occur more frequently than 2 times per week.

4.4. The risk of taking such amounts of blood can only be considered minimal, when the probability and magnitude of harm or discomfort anticipated are not greater than those ordinarily encountered in daily life or during the performance of routine medical or psychological examinations or tests.

4.5. For example, the risk of drawing a small amount of blood from a healthy individual for research purposes is no greater than the risk of doing so as part of a routine medical examination. The assessment of the probability and magnitude of the risk, however, may

[4] *Ref: HBRA HBR SAE Infographics*

[5] *U.S. Department of Health and Human Services (HHS) Federal Register: November 9, 1998 (Volume 63, Number 216) and adapted from National University of Singapore IRB-Guidelines 004, Collection of Blood Samples for Research, Ver 1. Jan 26, 2004.*

[6] *OHRP 45 CFR 46.110*

be different in sick children or elderly and may vary depending on the diseases or conditions the subjects may have. For example, obtaining blood samples from a haemophiliac child may present more than minimal risk to the child.

5. The responsibility lies with the Principal Investigator and the attending physician (in the case of a patient) to justify the reasonable volume of blood to be taken, taking into consideration the health condition of the subjects, and the number of scientifically significant tests required to be performed on the blood sample for the research.

6. Below is the list of human biological material excluded from the definition of human tissue:

6.1. Hair shaft, cut without dermal hair root or follicle.

6.2. Nail plate, cut without underlying dermal tissue.

6.3. Naturally excreted bodily fluids and waste products such as saliva, sweat, urine and faeces.

6.4. (1) Any other human biological material that is not individually-identifiable and has been processed in such a manner that its functional, structural and biological characteristics are substantially manipulated as compared to the time of collection.

(2) For the purposes of and without prejudice to the generality of sub-paragraph (1), human biological material is not deemed to be substantially manipulated merely because it has been processed by any of, or any combination of, the following methods:

a) cutting; grinding; shaping; centrifugation; soaking in antibiotic or antimicrobial solutions; sterilization; low-level irradiation; cell separation, concentration or purification; filtering; lyophilisation; freezing; cryopreservation; vitrification.

The above guidelines are written for the purpose of advising applicants on the details required when filling up the SSI IRB Review Application Form. They do not, by any means, represent judging criteria used by the SSI Institutional Review Board or have any impact on the outcome of application and the decisions made by the SSI Institutional Review Board.