Participant Recruitment Information Leaflet

Interested parties should contact Aisling Smith before Friday January 29th.

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Title of the study: Analysis of the influence of stroke phase difference on the power delivery mechanism in racing kayak doubles.

Introduction:
The objective of this study is to identify the optimal phase (time) difference between the entry time of the front and back blade of a kayak paddling crew that will provide maximum power delivery into the forward motion of a K2 racing kayak.
Participation in this study will require attendance to a laboratory and "on water" testing session, each with an expected duration of approximately 1 – 2 hours. This study requires eight participants only; hence all that volunteer may not be required to participate in the study.

Procedures:

Inclusion criteria: You must be a male kayaker participating in races regularly as a member of a registered sports club at either a university or national or International level and aged over 18 years. You will be screened for exclusion criteria via a PAR-Q medical questionnaire on one occasion before testing any testing related to the study will commence.. Should your completed PAR-Q questionnaire highlight any health related issues then a medical examination, including collection of a blood sample, will then be performed by registered medical practitioner (Dr. Mark Boyce) with your consent. If no issues are highlighted by your PAR-Q responses then a detailed medical examination will not be performed on you.

With your consent, you are invited to participate in two sessions outlined below:

1. The first session will be conducted in the Human Performance Laboratory, located on Level 2 of the Watts Building in Trinity College. An initial PAR-Q questionnaire must be completed before participating in this study. A detailed medical assessment will be undertaken only in the event of issues highlighting inclusion / exclusion criteria being flagged by PAR-Q questionnaire. This session will require you to paddle for short periods of time on a kayak ergometer over a range of stroke rates similar to that of used in a K2 sprint races. The power recorded for each effort will be combined with the results of other participants and used in calculations to determine the optimum stroke timing offset for maximum power delivery to the kayak.

A wireless load cell will record the load experienced by the kayak paddle shaft of the ergometer.
A standard heart rate monitor will be worn by you during ergometer testing to quantify the effort exertion over the range of resistances.

2. The second session will be conducted on a body of still water. You will be required to paddle a K2 kayak with another participant. You will use a metronome to time your stroke to the required stroke rate in order to verify the results of previous calculations based on ergometer testing.
   Paddles equipped with a strain gauge will record your applied load exerted on the paddle shaft. The velocity of the kayak will be measured using a GPS device located on the kayak shell.
   A standard heart rate monitor will be worn by you during on-water testing to quantify the effort exerted by you when paddling at each phase offset.

Benefits:

You will receive a copy of the conclusions of the proposed study which will identify the stroke timing offset that is deemed to be the most beneficial when competing in K2 kayak racing. This information could aid your performance when racing in a K2 kayak.
The cadence at maximum power output for you will be identified during ergometer testing. This information may aid you with the selection of a suitable paddle size and shaft length to achieve this optimum cadence.

Risks:
The risks associated with the study are minimal. You will be performing at intensities similar to those in training and competition. The tests involve no impact and, therefore, the risk of injury is minimal. You will at all times be under the supervision of the lead investigator.

Participation Inclusion Criteria

- >18 years
- Healthy, injury free (as assessed by medical questionnaire) trained athletes who are participating in races regularly as members of a team or club at either a University, National or International level
- Completion of at least one race in a K2 kayak.
- Athletes who give consent to participate in the study
- All subjects must be current registered member of Canoeing Ireland and as such are covered under the insurance policy of the national governing body to perform on water paddling at the planned testing site.

Exclusion from participation
You cannot participate in this study if any of the following are true:
Exclusion criteria:

- You do not meet the inclusion criteria
- You are not a current registered member of Canoeing Ireland.
- You are female
- If you train/compete less than 3 times per week
- You do not participate in races regularly as a member of a registered sports club at either a university or national or International level.

- You are under 18 years old
- You are currently suffering from an injury
- You are ill or suffering from infection.
- You fail to complete a consent form
- You have high or low blood pressure or are found to have either during your pre-screening assessment
- You have any diagnosed cardiac or ECG abnormalities
- You have any respiratory difficulties (based on your spirometry data) or symptoms of colds/influenza on the day of testing
- You have an acute or chronic musculoskeletal injury that could limit your exercise capacity
- You have a disease that would prevent you from participating in an exercise test
- You are deemed unfit to participate on completion of your medical questionnaire and medical examination due to an on-going illness, or if you have any of the following; diabetes, hypertension, heart defects, metabolic disorders or other contraindications to exercise testing.

Confidentiality:
Your identity will remain confidential. Your name will not be published and will not be disclosed to anyone outside the designated study group. Data collected during the study will be stored on a computer in a secure location which only the lead investigator will have access to. The computer will be password protected and only the investigator will have access to the password. All hardcopy records will be kept in a secure storage place in the laboratory, which only the lead investigator will have access to. For additional security, your identity and data will be referenced under a study specific code number at all times. These security measures will stay in place during the study and after it has finished. Data will only be analysed in group format and no personal information or data for any volunteer will be disclosed. Data will be kept for the duration of the study and will be kept in a locked cabinet for a maximum of five years in total.

Compensation: This study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights.

Voluntary participation: If you decide to volunteer to participate in this study, you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

Stopping the study: You are aware that the investigators may withdraw your participation in the study at any time without your consent.

Permission: This study has Research Ethics Committee approval from the Trinity College Dublin Faculty of Health Sciences Ethics Committee.

Further information: You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Aisling Smith who can be telephoned at **0863607847** or by email at ***smitha23@tcd.ie***. If the study team learns of important new information that might affect your desire to remain in the study, you will be informed at once.