EFFECT OF 10 MINUTES VS 20 MINUTES PASSIVE REST AFTER WARM-UP ON 100 METER SPRINT TIME TRIAL PERFORMANCE

MOHAMAD HAZIQ BIN HASBULLAH

SULTAN IDRIS EDUCATION UNIVERSITY

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EFFECTS OF 10 MINUTES VS 20 MINUTES PASSIVE REST AFTER WARM-UP ON 100 METER SPRINT TIME TRIAL PERFORMANCE

MOHAMAD HAZIQ BIN HASBULLAH

THESIS PRESENTED TO QUALIFY FOR A BACHELOR OF SPORTS SCIENCE (COACHING SCIENCE) WITH HONOUR

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(Year thesis is submitted)

DECLARATION OF AUTHENTIC WRITING

I hereby declare that this thesis entitled effects of 10 minutes vs 20 minutes passive rest after warm-up on 100 meter sprint time trial performance is based on my original except for citations which have been duly acknowledged. I also declare that it has not been previously submitted for any other degree or award at Sultan Idris Education University or other institutions.

31st July 2021

Mohamad Haziq Bin Hasbullah

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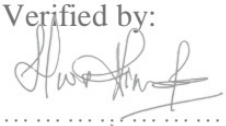

(Noor Aiwa Binti Rosman)
Supervisor
Department of Coaching Science
Faculty of Sport Science and Coaching
Sultan Idris Education University

Date: 1st August 2021

APPROVAL FOR SUBMISSION

This thesis entitled effect of 10 minutes vs 20 minutes passive rest after warm-up on 100 meter sprint time trial performance prepared by Mohamad Haziq Bin Hasbullah was certified to met required standard for submission in partial fulfilment of the requirement of the requirement for the award of Bachelor of Sport Science (Coaching Science) with honour at the Sultan Idris Education University.

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(Noor Aiwa Binti Rosman)
Supervisor
Department of Coaching Science
Faculty of Sport Science and Coaching
Sultan Idris Education University

Date: 1st August 2021

……

(Dr. Nor Aijratul Asikin Bt Mohamad Shalan)
Course Coordinator
Department of Coaching Science
Faculty of Sport Science and Coaching
Sultan Idris Education University

Date: 5/8/2021

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ABSTRACT

Research on the effects of the passive rest has been growing exponentially over the past two decades. The aim of this study was to compare the effect of 10 minutes vs 20 minutes passive rest post warm up on performance in a 100 meter sprint time trial. Eight male 100 meter sprinter athletes aged 20-23 (with 1-3 years' experience in competition at the district level or higher) performed two experimental 100 m sprint time trials after 10 minutes and 20 minutes passive rest of the standardized warm up, on separate days separated by 48 hours for each trial. Performance of the athletes which is time trial were assessed and compared. Control group need to perform 100 meter sprint time trial after warm without have passive rest. Performance was improved moderately in 10 minutes compared to the 20 minutes passive rest conditions. Results show time trial performance was faster after 10 min as opposed to 20 min passive rest (14.35 ± 0.97 s vs. 14.54 ± 0.97 s, $p < 0.05$). There is significant effect of the longtime of passive rest to the athlete's performance in 100 meter sprint. As conclusion, these data show 10 minutes post warm up passive rest enhances 100 meter sprint time trial performance when compared to a 20 minutes post warm up passive rest.

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LIST OF ABBREVIATIONS

ATP	Adenosine triphosphate
NADH	Nicotinamide adenine dinucleotide
DNA	Deoxyribonucleic acid
ANOVA	Analysis of variance
SD	Standard deviation
ROM	Range of motion

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CHAPTER 1

INTRODUCTION

1.1 Background research

Warming-up before training or competitive event become routine for all athletes. Warming-up routine for or among athletes completely different but the main reason for the warm-up remains the same which are to promote an increase in blood flow through vasodilatation to optimize metabolic reactions, thus improving the efficiency of muscle glycolysis and phosphate degradation during exercise, and to cause or resulting in faster oxygen dissociation from hemoglobin. Warming-up before exercise and competition can maximize athlete's performance.

Research suggests that warm-up routines should be conducted as close as possible to a competitive event to have positive effect on performance of the athletes (Ramos-Campo et al., 2020). However, official event or competition during 100meter sprint have transitional phase between warm-up and competitive event. This transitional phase can produce greater decrease in performance because this transitional phase can last between 15-20 minutes. This transitional phase minimizes athlete's movement and passive rest period in which can lead to rapid decrease of muscle temperature and impair the performance (Silva, Neiva, Marques Izquierdo & Marinho, 2018).

1.2 Problem statement

In 100 meter sprint, a period after warm up and before competition will take some time. During this period, athlete may take a passive rest. This passive rest may effect athlete's performance in 100

meter performance. Abbes et al. (2018) in their study show that athletes needed to finish their warm up 30 minutes before the race based on the competition rule. Athletes that take too long time passive will need to re-warm up to maximize their performance. However, it was not known the optimum time that the athletes need in order to maintain the effect of warming up prior the competition. Lastly, if the passive rest take too long time, it will effect athlete's performance then athletes needed to do re-warm up.

1.3 Objective

The aim of this study was to compare the effect of 10 minutes vs 20 minutes passive rest post warm-up on performance in a 100meter sprint time trial.

1.4 Research question

What is the difference between 10 minutes and 20 minutes passive rest on the athlete's time trial performance?

1.5 Hypothesis

H1: There is a significant change on athlete's time trial performance.

1.6 Operational definition

1.6.1 Vasolidation

Vasodilatation mean widening of blood vessels as a result of relaxation of the muscle in the vessel walls. This allows a greater volume of blood to pass through in a given time. Vasodilatation is

synonym with vasodilation which widening of the lumen of blood vessels (Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition, 2003)

1.6.2 Muscle glycolysis

Glycolysis is the metabolic reaction which produces two molecules of ATP through the conversion of glucose into pyruvate, water, and NADH in the absence of oxygen. Glycolysis alone can provide energy to the muscle for approximately 30 seconds, although this interval can be increased with muscle conditioning (Lumencandela, 2019)

1.6.3 Phosphate degradation

Degradation is the act of lowering something. Phosphorus is a mineral the body needs to function and for the cells to work well. Phosphorous is found in all parts of the body and is stored with calcium in the bones. Some of the phosphorus in the body exists as a charged particle (ion) called phosphate. Phosphate is also used as a building block for several important substances, including those used by the cell for energy, cell membranes, and DNA (Lewis, 2020).

1.7 Limitation

The limitation of the study was the weather. This study was completed in the outdoor track which unpredictable weather condition can played into effect such as wind and heat. Therefore, this factor was taken into consideration and data collection were done at the same time and place. Another limitation of the study was the effect of the warm up between the subject, therefore the participant or the athletes in this study were in the same background of sports and familiar with the warm up protocol.

1.8 Delimitation

The delimitation of this study was the gender. In this study, only male athletes were chosen to participate as subject. Another delimitation for this study, participant were chosen based on the experienced of the male athletes in the 100 meter sprint. Participant needed to have at least 1 year experienced on 100 meter competition in district level or higher.

1.9 Significance of study

This research gives the coaches an understanding about the warming-up processes before the event or competition. With this study the coaches will know if/whether the passive rest after the warm-up routine will degrade the athlete's performance in the competition. So, this study will create awareness to not only the coaches but also educators and all the personnel involve in sport to always apply the finding of this study to make sure the athlete's performance are optimized.