

The background of the cover is a photograph of a person in a rowing boat on a calm lake. The person is in the foreground, facing away from the camera, with their arms on the oars. The water is very still, reflecting the sky and the distant mountains. The mountains are silhouetted against a bright, hazy sky. The overall color palette is dominated by blues and greys, with a white box for the logo in the top right corner.

**SESNZ**

SPORT & EXERCISE SCIENCE  
— NEW ZEALAND —

# ABSTRACTS FROM THE 2018 ANNUAL CONFERENCE

26th-27th October 2018

University of Otago,  
Dunedin, New Zealand

Day One: Friday 26 <sup>th</sup> October (Hutton Theatre)			
16:15	Perceptual and physiological responses to differing ergogenic mouth swilling solutions. <i>Russ Best</i>	The role of informal, unstructured practice in developing football expertise: the case of Brazilian 'Pelada'. <i>Luiz Uehara</i>	
16:30	Hepcidin and iron status in elite female rugby players. <i>Simone Smith</i>		
16:45-18:00	POSTER PRESENTATIONS		
18:00-18:30	Updates from our international counterparts ESSA, ACSM, BASES.		
18:30-onwards	MOU Signing and Celebration + Social function at University of Otago Staff Club		

Day Two: Saturday 27 <sup>th</sup> October (Hutton Theatre)			
08:00-08:30	Refreshments		
08.30-09:30	Keynote Speaker: <i>Dr Shona Halson</i> , Australian Catholic University		
Parallel Sessions	Hutton (Heat stress)	Tekapo (Sport Med/Biomech)	Barclay (Sport psychology)
9:35	Does the mode of heat acclimation affect the kinetics of adaptation? <i>Lorenz Kissling</i>	History of concussion is associated with higher head acceleration during simulated rugby tackle. <i>Melanie Bussey</i>	Effects of sleep deprivation on perceptual-motor performance under low and high threat. <i>Arne Nieuwenhuys</i>
9:50	The impact of solar radiation exposure on professional team-sport training and recovery. <i>Fergus O'Conner</i>	New Zealand Rugby Community Concussion Strategy: 2018 Pilot Study. <i>Janelle Romanchuk</i>	Life skills acquisition and psychological development in elite cricketers: evaluating the effectiveness of a life development intervention. <i>Adam Miles</i>
10:05	Heat response testing in elite rugby sevens athletes: an eye to Tokyo 2020. <i>Stephen Fenemor</i>	The effects of fatigue on the spine motion of cricket fast bowlers. <i>Corey Perrett</i>	Working memory training in a modified Loughborough soccer passing test impacts skill performance in youth football players. <i>Joseph Hall</i>

## 58. Exercise Management For People With McArdle Disease: A Pilot Case Study

Kaur, P; Longhurst, G

*Waikato Institute of Technology*

**Background:** This is a case study of a 61 year old male who has been diagnosed with McArdle disease 5 years ago. The cardinal signs and symptoms are inclusive of activity intolerance, early fatigue and second wind phenomenon. **Purpose:** The Purpose of this study is to implement an intervention strategy for clients with McArdle's disease. **Methods:** A six weeks protocol included an initial baseline functional assessment for the client prior to exercise session. The exercise session was inclusive of a 7-10 minutes of warm up, 20-30 minutes of cardiovascular and resistance training followed by a 10 minutes of cool down phase. There were two supervised sessions per week. After 10 sessions of exercise protocol functional assessment was repeated and results noted. The client was allowed proper rest periods during the exercise session. **Results:** Post intervention the functional assessment was repeated. There was significant improvement in agility, muscular strength, muscular endurance, balance, flexibility of upper body and aerobic capacity of the client. Client also reduced weight and waist girth. Overall improvement resulted in gaining confidence for the client. **Discussion:** The exercise induced response is due to the main energy substrate that has no dependence on muscle glycogen deposits. **Conclusion:** We put forward an exercise regime to increase physical activity and quality of life in people suffering from this condition. Low muscle mass and strength levels lead to comprised cardiometabolic phenotype. Hence, exercise-induced hypertrophy is an attainable goal in McArdle's patients.

## 59. Effect Of Intramuscular Injection Of Epinephrine On Oxygen Consumption Kinetics During Heavy Intensity Cycling Bout

<sup>1</sup>Villamonte, R and <sup>2</sup>Borrani, F

<sup>1</sup>*New Zealand Institute of Sport*; <sup>2</sup>*University of Lausanne*

**Introduction** Prior heavy exercise bout on cycle ergometer changes the VO<sub>2</sub> kinetics of a subsequent heavy exercise bout. These changes are an increase in VO<sub>2</sub> fundamental component and a reduction in VO<sub>2</sub> slow component. **Methods** Seven healthy physically active male participants performed 8 min bout of heavy exercise on a cycle ergometer preceded by 1) 8 min heavy exercise bout with a 6 min rest period in between (prior and second heavy bouts); 2) 0.10 mg epinephrine intra muscular infusion on deltoid immediately followed by 5 minutes rest to reach the onset of action of epinephrine. One-hour rest period separated the 2 exercise sets. Ten blood samples were taken during the session. ANOVA was used to define significant differences in VO<sub>2</sub> kinetics parameters over all bouts as well as differences over the 10-blood samples taken. **Results** Epinephrine bout was significantly higher than the prior cycling bout. VO<sub>2</sub> slow component was significantly lower in the second bout compared to the prior bout and to epinephrine bout. **Discussion** The results of the present study demonstrate that Epinephrine injection increased the magnitude of amplitude and VO<sub>2end</sub> compared to prior heavy bout. **Take home message** Repeated heavy exercise bouts resulted in a smaller VO<sub>2sc</sub> with unaltered VO<sub>2end</sub> and amplitude.

## 60. Polo: An Introduction for Sports Scientists

<sup>1,2</sup>Best, R; <sup>1</sup>Standing, R.

<sup>1</sup>*Waikato Institute of Technology*; <sup>2</sup>*Teesside University*

Polo is an equestrian team sport, played by two teams of four athletes. There is a paucity of literature concerning Polo, focussing predominantly on injury rates, with minimal performance literature. This poster details key characteristics of Polo that are comparable to other areas of applied research,

this therefore lends Polo to being further investigated by Sport Science practitioners. Contested upon the largest pitch in professional sport, both male and female polo players have the opportunity to play around the globe. Despite a rich history, international competition and approximately 24,000 players worldwide, there is an obvious lack of sports science currently implemented within Polo; hence, opportunities in the areas of biomechanics, physiology, performance analysis and athlete wellbeing that are well established in other team sports exist. There are however idiosyncrasies unique to Polo, which may challenge conventional sport science strategies, such as the handicapping system and Polo performance being the manifestation of human and equine attributes.

## 61. Is cognition related to arterial CO<sub>2</sub> and cerebral blood flow reactivity to exercise?

<sup>1</sup>Shoemaker, L.N; <sup>2</sup>Wilson, L.C; <sup>3</sup>Lucas, S.J.E; <sup>4</sup>Machado, L, <sup>5</sup>Cotter, J.D.

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Cognition, as well as cerebral blood flow (CBF) and its major regulator (i.e., arterial CO<sub>2</sub>), increase with submaximal exercise and decline with maximal exercise. However, these responses may depend on fitness. We therefore investigated whether increased CBF contributes to the exercise-related cognitive benefit, and if it is affected by fitness. Ten active (26±3 years) and ten inactive (24±6 years) participants completed submaximal and maximal exercise whilst arterial CO<sub>2</sub> (PETCO<sub>2</sub>) was clamped at two levels of hypercapnia (i.e., increased PETCO<sub>2</sub>), and CBF velocity (CBFv) was measured continuously. Cognition (i.e., choice reaction time; RT) was measured before, during, and after exercise. Participants completed a separate resting time-control condition wherein PETCO<sub>2</sub> was matched to that during exercise, and cognition was measured accordingly. Mixed-model ANOVA analysis revealed that regardless of fitness, exercise increased CBFv beyond changes in PETCO<sub>2</sub> (p<0.00). More severe hypercapnia increased CBFv at rest (~25%) and during submaximal exercise (~23%, p<0.00), but impaired RT (p≤0.02). Exercise did not significantly improve cognition when compared to a PETCO<sub>2</sub>-matched time-control (p≥0.30). In conclusion, the cognitive effects of exercise were eliminated when PETCO<sub>2</sub> was matched during a resting time-control. Furthermore, fitness predicts RT at rest. However, this effect disassociates during exercise and with changes in PETCO<sub>2</sub>.

## 62. The effects of odor on high intensity exercise

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**Introduction:** It is possible that certain odor can affect motor performance due to smell-induced neural activity in the limbic system. The purpose of the present study was to examine influences of odor on exercise. **Methods:** Two aroma (peppermint, and eucalyptus), and no-aroma conditions were tested using 8 young healthy males (20.6 ± 5.7yr). They peddled a bicycle ergometer at 80% maximum workload until exhaustion in the room filled with/without the testing aroma. One-way repeated measures ANOVA was performed to test the significance (p< 0.05).

**Results:** The mean duration to exhaustion with eucalyptus was 208.5 ± 49.2 sec, which was significantly (about 20%) longer (p<0.01) than the control and peppermint. No odor difference was found in heart rate, blood lactate, and salivary amylase. **Discussion:** We assume that one of the reasons for increased exercise duration with eucalyptus was due to tracheal smooth muscle relaxation, which could cause vascular dilation and/or blood pressure decrease. Increase of hemoglobin dissociation or activation of mitochondria may be other reasons.