Oral Presentations

Sport Science

1. Running demands in women's rugby

[1]Busbridge, A.R.; [2]Hamlin M.J.; [1,3]Jowsey J.A.; [3]Vanner, M.H.; [1]Olsen, P.D.

[1]Department of Applied Sciences and Social Practices, Ara Institute of Canterbury, Christchurch, New Zealand
[2]Department of Tourism, Sport and Society, Lincoln University, Christchurch, New Zealand
[3]Canterbury Rugby Union, Christchurch, New Zealand

Introduction: Rugby union is a dynamic field based collision sport requiring technical skill and physical conditioning. There has been rapid growth in women's rugby worldwide, yet there is limited research determining the physical demands of the sport. Measuring running demands with GPS could aid in the design of training programmes, which are specific to players needs in competition. Consequently, we quantified the running demands of female rugby players in national provincial matches. **Method:** Twenty players from a Farah Palmer Cup team participated in the study. Players wore 10 Hz GPS units during seven games to measure total distance covered, all running distance (≥6.4 km·h^{-1}), high intensity (HI) running (≥16.1 km·h^{-1}) and maximum speed (km·h^{-1}). Data was divided into six positional groups (front row, locks, loose forwards, inside backs, midfield backs and outside backs). **Results:** All players travelled a similar total distance during matches (5887 ± 326 m). Outside backs spent ~60% of matches walking and did less running (2456 ± 114 m) than other positions ($p \leq 0.05$). In contrast, the half back recorded significantly higher running distances (4292 ± 171 m), greater HI running distances (1003 ± 58 m), and more distance overall (6812 ± 277 m) than other positions ($p \leq 0.05$). Maximum velocity for backs was higher than forwards (26.3 ± 0.3 km·h^{-1} vs 22.4 ± 1.1 km·h^{-1}). **Discussion:** Physical demands experienced by women's rugby union players varies depending on playing position. To adequately prepare athletes for competition, coaches and trainers should consider individual match demands in training. **Take home message:** The half back position is very demanding in terms of low and high-speed running whilst outside backs covered less distances at higher speeds and running in general. Therefore, position specific conditioning practices and coaching tactics such as selection should reflect these findings.

2. Examining footwear manufacturer websites – Is the industry ahead of science?

[1]Ramsey C.A.; [2]Mącznik, A.; [3]Bartold, S.

[1]Institute of Sport, Exercise and Health – Otago Polytechnic, Dunedin, New Zealand
[2]Institute for Integrated Sports Medicine, School of Medicine, Keio University, Tokyo, Japan
[3]University of Melbourne

Introduction: Footwear characteristics in running-related research are inconsistently reported. This has led to difficulties comparing results across studies and provides poor evidence regarding the impacts of footwear on injury, performance and biomechanics. The objectives of this study were: (1) to document the footwear characteristics reported on footwear manufacturer's websites, (2) to evaluate the quality of manufacturer websites and (3) develop criteria for reporting footwear characteristics. **Method:** Four location-disabled internet search engines: Bing, Google, Yahoo, DuckDuckGo were used to identify footwear manufacturer websites. Search terms included 'running footwear' and 'running shoes'. Data was extracted from the included websites on up to four different footwear models per manufacturer, and included characteristics such as: nomenclature used, objective footwear measurements and advice provided to runners. **Results:** Eighty footwear models were evaluated from 24 websites that were deemed as poor-quality as health-related web resources. There is a consistent use of nomenclature when describing footwear type (i.e. minimalist, motion control, neutral), across all manufacturers, however, there is a wide variety of measurements and characteristics reported by the manufacturers. Additionally, a content analysis of the advice provided to runners is inconsistent with current research and may be used purely for marketing purposes. Preliminary development of a footwear reporting protocol includes 28 items categorised into 12 components. **Discussion:** Despite the availability of consensus footwear definitions and valid assessment tools, reporting of footwear characteristics on manufacturer websites is inconsistent. Manufacturers could improve the information provided by using a standard reporting protocol. This protocol could also be used in the academic literature and as a result, help improve the reporting quality of the studies on the impacts of footwear on injury, performance, and biomechanics. **Take home message:** Currently, the footwear industry appears to report footwear nomenclature more consistently than the academic literature of the past four decades. Future Delphi studies are needed to develop reporting protocols that span the scientific and footwear industry sectors.

3. The influence of COVID-19 lockdown restrictions on perceived nutrition & training habits in rugby union players

[1]Roberts, C.; [1,2]Gill, N.; [1]Sims, S.

[1]Te Huataki Waiora School of Health, University of Waikato, Mount Maunganui, New Zealand

[2] *New Zealand Rugby Union, Wellington, New Zealand*

Introduction: The global spread of COVID-19 has led to governments and local authorities implementing nationwide lockdowns to minimize the spread of the virus. In New Zealand, all non-essential businesses and services closed or restricted activities. **Methods**: Two surveys were distributed among Rugby Union players to establish (1) the influence of COVID-19 lockdown restrictions on Rugby Union players' perceived nutrition and training habits and (2) how perceived nutrition and training habits in Rugby Union players' changed following relaxation of lockdown restrictions. **Results**: Of the 258 respondents who completed Survey 1 (84.1% male, 26.4% professional/ semi-professional), 58% indicated living with family during lockdown. Total food intake was reported to be higher in 36% of respondents. Fruit and vegetable intake was lower (17%) and packaged/convenience food intake higher (26%) in a minority of respondents. In total, 106 respondents completed Survey 2 (84.9% male, 34.0% professional/semi-professional). Of these, 72% prepared and 67% purchased their own food. Compared to during lockdown, motivation to train and exercise was greater in 58% of respondents following lockdown. Dieticians and nutritionists within clubs provided most nutrition information/knowledge to athletes however other unreliable sources were identified, such as social media and family members. **Discussion:** Due to the unprecedented and unique nature of the COVID-19 pandemic, literature concerning lockdowns on athletes' nutrition and training habits is scarce. With matches and group training sessions cancelled and gyms, eating establishments and workplaces closed, Rugby Union athletes' experienced significant disruption and changes to their daily lives. **Take home message**: The on-going pandemic has presented significant challenges for athletes concerning perceived nutrition and training habits. Coaches and performance staff should ensure athletes' receive appropriate and reliable nutritional and training support whilst being aware of the unique demands the individuals' may face.

4. Physical activity and mental health during COVID-19 lockdown: an international comparison

[1]Elliot, C.; [2]Faulkner, J.; [3]O'Brien, W.; [4]McGrane, B.; [5,6]Wadsworth, D.; [2]Batten, J.; [5,6]Askew, C.; [3]Badenhorst, C.; [7]Byrd, E.; [4]Coulter, M.; [8]Draper, N.; [9]Fryer, S.; [1]Hamlin, M.; [7]Jakeman, J.; [10]Macintosh, K.; [10]McNarry, M.; [7]Mitchelmore, A.; [4]Murphy, J.; [2]Ryan-Stewart, H.; [11]Saynor, Z.; [5,6,12]Schaumberg, M.; [9]Stone, K.; [13]Stoner, L.; [14]Stuart, B.; [14]Lambrick, D.

[1] Lincoln University, New Zealand
[2] *University of Winchester, UK*
[3] *Massey University, New Zealand*
[4] *Dublin City University, Ireland*
[5] *University of the Sunshine Coast, Australia*
[6] *Sunshine Coast Hospital and Health Service, Australia*
[7] *Oxford Brookes University, UK*
[8] *University of Canterbury, New Zealand*
[9] *University of Gloucestershire, UK*
[10] *Swansea University, UK*
[11] *University of Portsmouth, UK*
[12] *The University of Queensland, Australia*
[13] *University of North Carolina at Chapel Hill, USA*
[14] *University of Southampton, Southampton, UK*

Introduction: At the onset of the COVID-19 pandemic, national governments implemented strict containment strategies to limit the spread of the virus. This study assessed physical activity, mental health and wellbeing during COVID-19 restrictions in adults across the UK, Ireland, New Zealand and Australia. **Method:** An online survey was distributed in each country using convenience sampling, within 2-6 weeks of government mandated COVID-19 restrictions. During the COVID-19 restriction period, participants completed the Stages of Change scale in relation to exercise behaviour change, the International Physical Activity Questionnaire (short-form), World Health Organisation-5 Well-being Index and the Depression Anxiety and Stress Scale-9. Participants also completed the Stages of Change scale for exercise behaviour change with respect to pre-COVID-19 restrictions. **Results:** In a sample of 8,425 people, individuals who reported a negative change in exercise behaviour between pre- and during COVID-19 restrictions demonstrated poorer mental health and wellbeing ($p < 0.001$). Whilst women reported more positive changes in exercise behaviour, young people (aged 18-29 years) reported more negative changes (both $p < 0.001$). Although there were no differences in physical-activity participation between countries, New Zealand reported significantly higher mental health and wellbeing ($p < 0.001$) while Ireland reported significantly lower ($p < 0001$). The UK and Australia had significantly greater negative change in exercise behaviour than NZ or IRE ($p < .0001$). **Discussion:** These findings have important implications for policy and guideline recommendations to encourage people to be physically active, as well as targeting known groups (i.e., men, young adults) who are more likely to become less physically active and experience poorer mental health and wellbeing outcomes during periods of physical distancing. **Take home message:** During the height of the COVID-19 restrictions, people who reported a negative change in exercise behaviour between pre- and during-COVID-19 restrictions demonstrated poorer mental health and wellbeing.

5. Longer sleep duration enhances training adaptations in a military population

[1,2]Edgar, D.; [1]Gill, N.; [3]Zaslona, J.; [4]Driller M., [1]Beaven, C.M.

[1]*University of Waikato*
[2]*New Zealand Defence Force*
[3]*Sleep / Wake Research Centre, Massey University*
[4]*La Trobe University*

Introduction: Sleep is vital in influencing effective cognitive and physical performance in the military. This study aimed to assess the relationship between sleep and changes in physical performance over 6-weeks of military training. **Methods:** 22 officer trainees (age: 24 ± 10 y) from the New Zealand Defence Force wore wrist actigraphs to monitor sleep, completed subjective wellbeing