OHdG) determined with high performance liquid chromatography.

Results: A two-way analysis of variances represented main effects for session ($p<0.05$, 0 and 12 months), but not for day (Days 1, 3 and 5) or interaction regarding the levels of urinary 8-OHdG (ng/ml creatinine, values computed as the average of three successive days, Day 1: 2.1±0.8, day 3: 2.8±0.9, Day 5: 3.1±1.1 for 0 month, Day 1: 4.1±1.4, day 3: 3.8±1.7, Day 5: 3.6±1.3 for 12 months, respectively).

Discussion: Previous studies have found that high-intensity exercise training increases oxidative stress. On the other hand, moderate-intensity exercise training has been reported to increase antioxidant capacity as a result of training adaptation. In this study, increased whole-body DNA oxidation was observed, but it remains to be elucidated whether it is derived from the amount of training (dependent on intensity and duration), induced from hydration status in a warm-humid environment, or derived from hormonal fluctuation (e.g., estrogen). In conclusion, the results of this study suggest the possibility of increased responses in whole-body DNA oxidation to the long-term volleyball training in adolescent female athletes, which appears to be a transient increase.

Impact and application to the field: When adolescent athletes train for extended periods of time in a warm-humid indoor environment such as a gymnasium without air conditioning, measuring biomarkers of oxidative stress can provide useful information for athletes to manage their physical condition.

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(P100021)

Effectiveness of hydration education to improve hydration status during summer seasons in adolescent female indoor-sport athletes

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Introduction: When athletes conduct sport practices and competitions for long periods of time in a warm-humid indoor environment without air conditioning or other climate control equipment, care must be taken to prevent heat stroke. In this regard, it is necessary for coaches and other instructors to provide athletes with hydration education (optimal hydration strategy) so that each athlete understands and puts it into practice However, it is still unclear how much hydration education for adolescent athletes is effective in maintaining and improving their performance levels. The objective of this study was to assess the effects of an educational intervention on hydration status during summer seasons in adolescent female indoor-sport athletes.

Methods: Ten eumenorrhoeic female volleyball athletes (as baseline values; age: 15.2±0.4 years, height: 159.9±5.5 cm, body weight: 55.2±6.1 kg, BMI: 21.5±1.6 kg/m^2, body fat: 22.4±4.5 % [mean±SD]) participated in this study. In addition to physical training, volleyball training, including ball handling, specialized drills, and game-style practical skills, was conducted in the school gym for approximately 2 to 2.5 hours per day, six days a week. All participants were educated about hydration strategies for approximately 1 hour at 0 (baseline), 10, and 22 months, respectively. Each individual consumed ad libitum commercially available carbohydrate-electrolyte solution (Pocari Sweat®, Otsuka Pharmaceutical Co., Ltd.; energy:104.6 kJ/100 mL, carbohydrate: 6.2%, Na^+:21 mEq/L, K^+:5 mEq/L, Cl^-:17 mEq/L) over the daily practice. After heat acclimatization has naturally occurred in all participants, urine samples were collected before and after volleyball club activities on three successive days (Days 1, 3, and 5) at 0, 10, and 22 months (three consecutive summer seasons), respectively, for the later analysis of the urine specific gravity in order to determine hydration status determined by a refractometer. Changes in body mass and fluid intake were also recorded.

Results: A two-way analysis of variances showed main effects for time ($p<0.05$, before and after), but not for session (0, 10 and 22 months) or interaction concerning the levels of urine specific gravity (values calculated as the average of three successive days, before: 1.027±0.004; after: 1.030±0.003 for 0 month, before: 1.028±0.004, after: 1.030±0.004 for 10 months, before: 1.025±0.006, after: 1.029 ±0.004 g/mL for 22 months) following each hydration educational session. **Discussion:** Prior research has argued whether education about hydration strategy during practice and games improves hydration status, but in practice, some cases have been improved by such education and others have not. Possible reasons for those differences include the divergences in hydration methods using cups or plastic bottles and in indoor environments not equipped with air conditioning. In conclusion, the results of our study imply that several sessions of hydration education may not be sufficient to lead to the dramatic improvement of hydration status.

Impact and application to the field: Hydration education needs to be continued until each athlete understands and is able to put into practice what they have learned.

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(P100040)

Community participation in the design and development of a physical activity and psychosocial program for Indigenous girls: Processes, experiences and lessons learnt

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Introduction: Recent social changes in political and academic thinking have improved the way Indigenous health research is conducted. A wealth of resources containing theoretical and practical guidance are now available to support academics and health practitioners when engaging Indigenous peoples in research. Despite this evolution of practice, Indigenous health disparities still pervade, indicating something is missing in the Indigenous health research toolbox. One identified gap is a lack of documented experiences detailing how broad ethical guidelines and principles may be practically applied. This presentation will 1) describe the research processes involved in co-designing a physical activity and psychosocial health program for young Indigenous girls and 2) highlight key learnings of the collaborative research journey from an intercultural lens.

Methods: Information and guidance regarding appropriate research engagement with Indigenous peoples were gathered over the project's first year. Data gathering activities included: a review of relevant literature, discussions at team meetings, a consultative workshop with Indigenous community members, and briefings from an Aboriginal Reference Committee. This information was then aligned with the Criteria for Strengthening Reporting of Health Research involving Indigenous Peoples (CONSIDER) statement and used to document participatory research activities undertaken with

an Indigenous community-based partner. Both Indigenous and non-Indigenous members of the research team engaged in critical reflection to identify lessons learnt and inform future projects in other community health settings.

Results and discussion: The CONSIDER statement provided a valuable framework for documenting key processes and detailing how Indigenous research principles were prioritised throughout the research journey. Researchers identified an inherent tension between participatory research principles and the expectations of funding agencies and academia. Consequently, research timelines and activities must be flexible to allow for sufficient community engagement and unforeseen community events. It is also essential for researchers and community stakeholders to embrace personal tensions that may occur whilst working at the cultural interface. Tensions may be linked to the reorientation of power dynamics associated with participatory research or the pressures Indigenous researchers face from community and academia to ensure a culturally appropriate project. Furthermore, differences in professional and cultural knowledge systems need to be acknowledged and accounted for within the early stages of a research project to ensure transparent communication and informed decision making.

Impact and application to the field:

- This paper details how an intercultural and intersectoral research team engaged in a participatory Indigenous health research project, providing a template for future research and practice collaborations.
- Identified lessons learnt will assist academics, practitioners and relevant stakeholders in future design, development, and delivery of Indigenous health promotion programs, ensuring the most appropriate health solutions are devised. However, it must be recognised that each Indigenous community is unique, and this must be accounted for when applying these key learnings.

Conflict of interest statement: My co-authors and I acknowledge that we have no conflict of interest of relevance to the submission of this abstract.

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(P100051)

A change point method to inform athlete progression in the return to sport progress

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Introduction: Return-to-sport (RTS) decision-making is often challenging, as rehabilitation is complex and non-linear. With advances in technology, an increasing volume of data is being collected at multiple time points during rehabilitation to track the progression. Computer-based analytical methods, such as change point (CP) detection, can leverage the data collected longitudinally to inform clinicians of the time points when there were meaningful changes. Here, we exemplify how longitudinal data in wellness and rehabilitation running performance data could be analysed with the CP approach. The CP approach holds promises for informing clinicians the rate of progression in rehabilitation and thus allowing clinicians to quantify and evaluate the RTS process.

Methods: The case was a professional football player who sustained a lower limb muscle injury during training. Data were prospectively collected during the 2021/2022 A-League season. Four variables from wellness (mood, sleep quality, muscle soreness, and stress) and five variables from rehabilitation running performance (total distance, maximum speed, high speed running, acceleration and deceleration) were collected over 97 days. Change point algorithm, performed in the R Studio, was then used to identify meaningful changes during the rehabilitation. The CPs were determined based on the mean and variance of the segments.

Results: Two types of analysis were performed, univariate and multivariate analysis. In the univariate analysis, the change points for mood, sleep, soreness and stress were located on days 30, 47, 50 and 50 respectively. The change points for total distance, acceleration, maximum speed, deceleration and high-speed running were located on days 32, 34, 37, 41 and 41 respectively. The multivariate analysis resulted in a single change point for the wellness variables and running performance variables, on days 50 and 67 respectively.

Discussion: The univariate approach provided information specific to each of the nine wellness and running performance variables, which could help clinicians to understand the rate of progression based on a single variable. The multivariate approach has the advantage to aggregate information regarding changes from multiple variables into a common change point. The common change point could simplify multiple time series data into relatively simple output for clinicians, providing an overall impression of the rehabilitation. Furthermore, although the wellness and running performance variables in this study were from different sources and of various data formats, all the variables can be visualised together in the same panel. Clinicians are encouraged to adapt similar analytics to quantify and evaluate rehabilitation programs.

Impact and application to the field:

- Clinicians working in RTS could use univariate change points to determine when a single performance variable has progressed or regressed.
- Multivariate change point detection allows clinicians to simplify the information input and be less likely to be overwhelmed by the high volume and different types of data.

Conflict of interest statement: My co-authors and I acknowledge that we have no conflict of interest of relevance to the submission of this abstract

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Implementing telehealth-delivered group-based education and exercise for osteoarthritis during the COVID-19 pandemic: A mixed-methods evaluation

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Introduction: The Good Life with osteoArthritis from Denmark (GLA:D®) program provides group-based education (2 sessions) and exercise-therapy (12 sessions) for people with knee and hip osteoarthritis at >500 sites in Australia and is associated with clinically meaningful improvements in pain and quality of life (QoL). During the COVID-19 pandemic, physiotherapists in Australia were supported to provide GLA:D® via telehealth. The aim of this