Letter to the Editor

Mental health impact on at-risk high-level athletes during COVID-19 lockdown: A pre-, during and post-lockdown longitudinal cohort study of adjustment disorder

We read with great interest the July issue of the Journal of Science and Medicine in Sport regarding the impact of the COVID-19 pandemic on athletes. In that issue, Pillay et al.[1] reported that 52% of athletes felt depressed during the lockdown period. There is, however, a lack of baseline data hindering the comparison of these findings to the pre-pandemic prevalence. This prompted us to do an early analysis of our ongoing longitudinal cohort study examining Adjustment Disorder (AjD) in Australian high-level athletes.

AjD is a stress-response syndrome[2] centred around preoccupation with a stressor (e.g. constant ruminations), and the failure to adapt to the stressor.[3] AjD is often accompanied by symptoms of depression, anxiety, impulsivity and avoidance.[4] High-level athletes possess proportionally high levels of mental health issues[5] and may be susceptible to AjD. AjD may be exacerbated by the pandemic[6]; uncertainty about competitions, qualification procedures (e.g. for the Olympics) and training environment restrictions may cause athletes stress in addition to the pandemic itself.[7] Many high-level athletes also face disruptions to study, job loss and subsequent decreased income, further increasing their risk of suffering mental health issues.[8]

Our study was originally designed to monitor high-level athletes during a period of adjustment to a specific stressor (injury, relocation, or being on tour/long periods away from home), indicating they were an at-risk group. Importantly, our dataset contains continuous, longitudinal AjD information recorded prior to, throughout, and after the first wave of COVID-19 and lockdown restrictions in Queensland, Australia.

1. Methods

Participants were 15 high-level athletes (male/female: $n = 6/9$; age: 22.9 + 4.4 years) from various sports, competing internationally ($n = 12$), nationally ($n = 2$), and at state level ($n = 1$). Athletes were eligible to participate in this study if, in the past year, they had experienced one or more of the following stressors; relocation, being away from home for long periods of time/being on tour, or injury. All participants either lived, studied, or trained in the state of Queensland, Australia, or they were Queensland Academy of Sport athletes based overseas. Ethics approval was granted by the USC Australia Human Research Ethics Committee before commencement of the study (approval number S191321).

Fortnightly, participants completed an athlete-specific version of the Adjustment Disorder New Module-20 (ADNM-20)[4] via SurveyMonkey.com. The ADNM-20 has good internal consistency ($\alpha = 0.94$),[9] and is available via a link in the Supplementary material (http://www.rehabtools.org/simons.html). This version of the

ADNM-20 was supplemented with sport- and-age relevant stressors (e.g. decreased training load, problems with your partner, failed an important exam). Informed consent was provided by the participants prior to each completion of the survey. Participants were asked to select any stressors or major changes they experienced over the past fortnight from the list, or to add their own if not represented. They were then asked to report which stressor(s) had caused them the most stress. Participants considered these identified stressor(s) while rating the 20 items of the ADMN-20 on a 4-point Likert-scale ("never", "rarely", "sometimes", and "often"). Participants received feedback on their survey results and were encouraged to seek support from a mental health professional if the survey results indicated the participant was at high risk of AjD.

Data were collated across 18 weeks on a fortnightly basis from February 1 to June 5 2020. This period included 7 weeks before initial COVID-19 lockdown measures were implemented in Queensland, Australia, and 11 weeks after, including the easing of restrictions to a level that allowed social life and training to resume. A timeline of the restrictions implemented in Queensland, Australia (Fig. 1), allows interpretation of the data in light of the pandemic. The ADNM-20 was scored as per the AjD risk algorithm created by Glaesmer et al.[4] This algorithm uses the scores on the two core subscales ("preoccupation with the stressor" and "failure to adapt") of the ADNM-20 to calculate a binary score, indicating whether a participant is at high risk of AjD. The total score on the ADNM-20 was also calculated. Higher scores on the ADNM-20 are associated with lower levels of mental wellbeing. Further to this, when participants reported COVID-19, associated restrictions, lockdown measures or consequences of the pandemic as one of their most stressful stressors, these were analysed to investigate in which manner the pandemic impacted upon the lives and mental wellbeing of the athletes.

2. Results

The harshest restriction measures were implemented on March 23, and included the closure of all formal training facilities for athletes (e.g. pools, gyms). The number of participants at high risk of AjD peaked the fortnight after these harshest restriction measures were implemented (Fig. 2A). Three participants were solely classified as at high risk of AjD during the fortnight of the implementation of the harshest restrictions, or the fortnight thereafter (Fig. 2B).

During the first three fortnights of the study, none of the participants reported the COVID-19 pandemic as causing them stress despite it being broadcast widely via news channels. Contrarily, the first two fortnights under the harshest restrictions, all participants reported the COVID-19 pandemic or its consequences as the most stressful stressors. Hereafter, this number dropped steadily. The COVID-19 related stressors most often associated with high risk of AjD were: relocation, self-quarantine and lockdown/social distancing. The five stressors most frequently reported by all par-
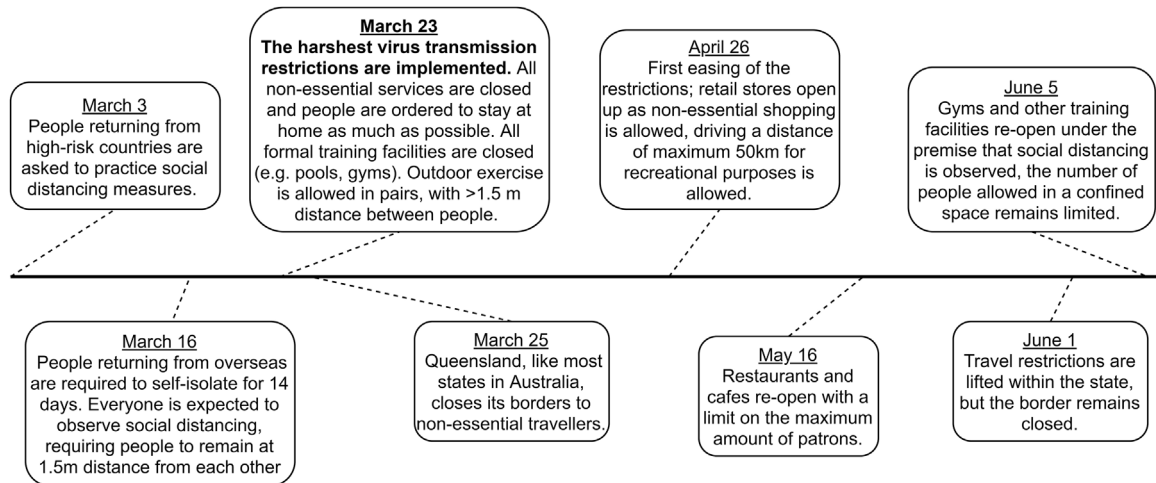
Fig. 1. Timeline of COVID-19 virus transmission restrictions implemented in Queensland, Australia.
Sources: https://www.pm.gov.au/media, https://statements.qld.gov.au/.
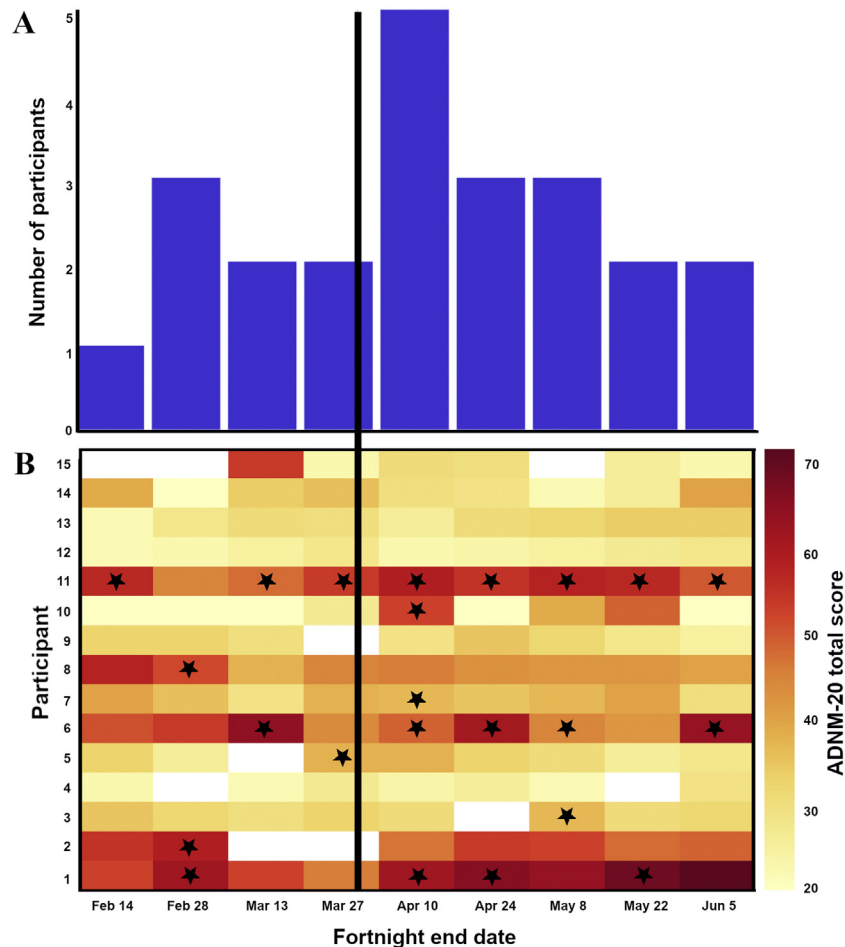

Fig. 2. Number of participants at high risk of AjD (A) and ADNM-20 total scores for each participant (B) per fortnight.
Note. The line in the graph indicates March 23, when the harshest restrictions were implemented. White spaces (B) indicate missing data. ★ Athletes classified as at high risk of AjD.

ticipants were: uncertainty about the future, decreased income, changed university teaching methods, training facilities unavailable, and season/competition cancelled. A supplementary table of all stressors is available via the Supplementary material (http://www.rehabtools.org/simons.html).

3. Discussion

The largest number of athletes found to be simultaneously at high risk of AjD coincided with the implementation of the harshest restrictions, indicating that high-level athletes' mental wellbeing was negatively impacted during the COVID-19 pandemic. Reloca-

tion and its associated obligatory self-quarantine were the stressors most noticeably related to high risks of AjD among high-level athletes.

Notably, this study was originally designed to monitor high-level athletes during a period of adjustment to a specific stressor (injury, relocation, being on tour/long periods away from home). Hence the COVID-19 pandemic was not the only major stressor, and results may differ for other high-level athletes. The original study started with more participants (n = 29). Participant drop-out mostly occurred prior to the period reported in this paper; hence is mostly unrelated to the lockdown period impact. Participant retention during longitudinal research is commonly recognised as challenging.[10] However, the online data collection proved beneficial to the continuation of the research and remained unchanged throughout the study.

Our findings support prior cross-sectional results indicating a high prevalence of depression and distress in collegiate athletes during the pandemic.[11] Additionally, the current study shows a return to baseline of athletes' wellbeing even while the restrictions remained in place. These findings may indicate athletes' resilience, and successful implementation of coping strategies and (self)interventions. A limitation of this study is that we did not specifically assess or control for the common mental health issues of depression and anxiety.

More waves of the COVID-19 virus and transmission restrictions are occurring across the world. Our findings highlight the negative impact of the pandemic and associated virus transmission restrictions on high level athletes' mental wellbeing and the specific stressors experienced by athletes during this time. The impact of the COVID-19 pandemic and virus transmission restrictions can quickly and frequently change. Therefore, future research should focus on continuous monitoring of high-level athletes' mental health to register changes in wellbeing in response to the pandemic. These studies should aim to include more participants, as a limitation of the current study is the small sample size, which prevented thorough, adequately powered statistical analysis. Additionally, in future studies, specific questions regarding the pandemic could be included alongside validated questionnaires.

The current findings could inform early intervention and/or prevention strategies to assist at-risk, high-level athletes in adjusting to the novel, and rapidly changing, realities of the pandemic. For example, based on the current findings, athletes who are forced to relocate due to the pandemic could be invited to connect with sport psychology practitioners on a preventative basis. Specific strategies that could be beneficial in these situations are mindfulness, reframing of the events, and goal setting [7], however efficacy studies are required.

References

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