

(様式 5)

指導教員 承認印	
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## 学位（博士）論文要旨

(Doctoral thesis abstract)

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論文題目 (Title)	人間のパフォーマンスを高める身心一体科学とその適用：一流スポーツ競技選手を対象として
論文要旨（2000 字程度） (Abstract (400 words)) ※欧文・和文どちらでもよい。但し、和文の場合は英訳を付すこと。 (in English or in Japanese)  Practical conditioning and training methods are established among elite athletes and coaches based on their experience. However, these methods may require changes to improve the performance of the athletes appropriately, given that the characteristics of sports matches could be changed over time. In Chapter 2, a study was conducted to interpret whether there have been any specific changes in the characteristics of the world's top-level women's singles badminton matches compared to that of men's after the current badminton scoring system was implemented in 2006. It was suggested that women's singles matches have become more intense, which may account for the increased acute injuries that are frequently observed in elite women's singles players. The study concluded that appropriate conditioning programs are required to improve performance and prevent injuries in elite badminton players. Changes in the condition of athletes are often estimated subjectively by athletes themselves and their coaches instead of using objective monitoring indices. However, inappropriate subjective evaluation of athletes' condition would negatively impact the performance of athletes because it would increase the susceptibility of injury and prevent athletes from making good forms for competitions. Recent studies suggest that monitoring objective indices such as heart rate variability (HRV) would be efficient for evaluating the condition of elite athletes. In Chapter 3, a study was conducted to examine the influence of changes in training load during a training camp on HRV	

indices in elite badminton players. HRV indices significantly changed as the training load decreased in the course of the training camp. Moreover, there was a significant correlation between the changes in HRV indices and the changes in the subjective feeling of fatigue. The study, therefore, concluded that measuring HRV indices is an efficient method for objectively monitoring the changes in the condition of elite badminton players. In Chapter 4, a study was conducted to examine changes in the condition of elite speed skaters during the season of competition by measuring HRV indices. HRV indices at the end of the season changed significantly compared to those at the beginning of the season. The results suggested that physical and mental conditions in the elite speed skaters might be altered in the course of the competition season.

In Chapter 5, the results of the studies presented in Chapters 2-4 are summarized. It also includes suggestions on how objective data could be more efficiently utilized among elite athletes and coaches to improve their sports performance.

(英訳) ※和文要旨の場合(400 words)