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Effects of a Repeated High-Intensity Efforts training compared to Repeated Sprint Training on repeated high intensity effort ability and in game performance in professional rugby union players.

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INTRODUCTION:
This study investigated the effects of a repeated high-intensity efforts (RHIE) training compared to repeated sprint exercises (RSE) training on repeated high-intensity effort ability (RHIEa) and in-game performance in professional rugby union players. In recent decades, the ability to repeat sprints has been considered as a major determinant of performance in team sports. However, rugby union is not only characterized by repetitions of running phases, but also by contact efforts.
Therefore, an evolution of the RSa concept has been proposed in rugby union: the Repeated-High-Intensity Exercises ability (RHIEa). RHIE have been defined as a sequence of three or more intense efforts interspersed with less than 21 s of recovery between each. Thus, in rugby union, the ability of a player to repeat RHIE bouts is considered as a crucial element and appears to be more relevant than the RSa for measuring performance. The high-intensity repetition training programs based on sprinting (RSE training) and based on alternating high-intensity running and contact efforts (RHIE training) generate specific adaptations on RSa and RHIEa, respectively. However, the efficiency of these methods for developing RHIEa has never been compared, and it still unknown whether these training methods differentially impact in-game efforts in rugby union.
METHODS:
Thirty nine male rugby union players (age, 26.4 ± 4.2 years ; height, 184.4 ± 7.6 cm; body mass, 97.2 ± 15.5 kg; 4 skinfolds body fat, 15.7 ± 4.1 %) from French second professional division were distributed into three training groups (RHIE training, RSE training, and Control groups). RHIE ability and high-intensity efforts characteristics during official games were assessed before (Pre-training) and after (Post-training) a ten-weeks specific (RHIE, RSE or control) training period.
RESULTS:
Concerning RHIEa, both RHIE training and RSE training led to significant improvements in average sprint velocity ($p < 0.001$), average sled push velocity ($p < 0.018$) and RHIE score ($p < 0.001$). However, gains in average sprint velocity were higher in RSE group (+ 4.1 + 2.6 %) while gains in average sled push velocity were higher in RHIE group (+ 8.1 + 5.5 %). Concerning high-intensity efforts in game, while both groups showed significant improvements in total distance, accelerations and contact rate, the number of sprints was higher in RSE group ($p<0.001$). Conversely, increase in contact rate was higher in RHIE (+ 40.5 + 18.3%) compared to RSE (+ 11.13 + 8.2 %, $p<0.001$) group and CONT group (-7.8 + 8.5%, $p<0.001$).
CONCLUSION:
These results suggest that both RSE and RHIE training are effective methods to develop RHIEa and athletic performance in professional rugby union games. As the gains of certain abilities and game performance data differ depending on the chosen training method, we suggest that coaches may choose the most appropriate method according to the type of player, their position, and according to the style of play they want to develop.
(1) Austin et al., 2011 ; (2) Johnston & Gabbett., 2011; (3) Sheehan et al., 2022; (4) Vachon et al., 2021; (5) Johnston et al., 2016.

Topic: **Coaching**

Presentation **Poster**