P101. Influence of playing position in strength exercises performance using eccentric-overload device in young basketball players

Flávia Costa[1], Jorge Arede[2], Nuno Leite[2]

1. Department of Sport Sciences, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal; fla.rcosta@hotmail.com; 2. Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, University of Trás-os-Montes and Alto Douro;

INTRODUCTION

Eccentric overload training was recently applied in movement variability analysis (Moras et al., 2018). The in-court response during training and match varies according to playing position (Torres-Ronda, Ric, Llabres-Torres, de Las Heras, & Schelling I Del Alcazar, 2016), however, regarding eccentric-overload training, this dependency is scarcely explored. The aim of this study was to examine the influence of playing positions on physical parameters in strength exercises using eccentric-overload device.

METHODS

Nine under-16 regional level basketball players were recruited for this study. Participants were grouped according to their playing positions: point guards (n=3; height = 171.1±3.2 cm), wings (n=3; height = 170.7±4.1 cm) and power forwards (n=3; height = 188.2±4.1 cm). Players performed two sets of 8 repetitions of Side-Step (Side), Backwards Lunge (Back) and Lateral Squat (Lateral) using a flywheel device (Eccotek Training Force) for each side with 2-minute rest between each set. The acceleration in the anteroposterior axis (Z), in the transverse or lateral axis (X), and vertical axis (Y) for overall movement was measured using an inertial measurement unit (WIMU PRO). The measurement of the mean velocity (Vm) was collected using chronojump software (v1.7.1), which was connected to an encoder attached to the rotation axis of the Eccotek Training Force. Approximate entropy (ApEn) for each acceleration was computed using SPRO Software v1.0.0 (Realtrack Systems, Almeria, Spain). The between-group differences were analysed using magnitude-based inferences.

RESULTS

Point guards showed higher Vm and ApEn in all axis in Side. Wings presented higher ApEn in all axis in Back, while power forwards obtained a higher Vm. Finally, power forwards showed higher Vm and ApEn in all axis in Lateral.
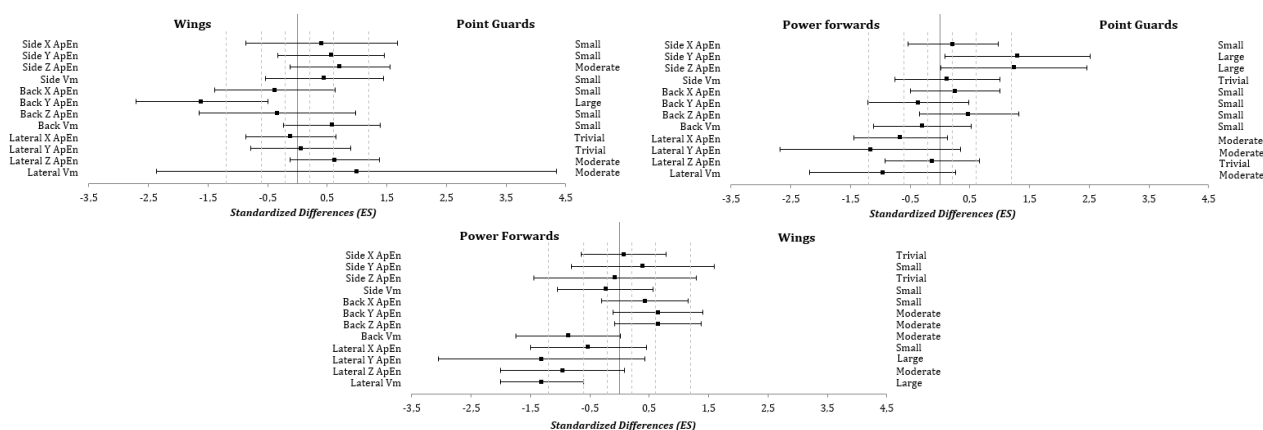

Figure 1. Between-group comparisons in the acceleration and strength-related variables

CONCLUSION

Each playing position revealed a different performance profile which might be explained by the specific demands of the playing positions. Consequently, individualised training focused on the position demands is needed in order to compensate the flaws, create well-adapted players and reduce injury risk.

References

Moras, G., Fernández-Valdés, B., Vázquez-Guerrero, J., Tous, J., Exel, J., & Sampaio, J. (2018). Entropy measures detect increased movement variability in resistance training when elite rugby players use the ball. *Journal of Science and Medicine in Sport, 0*(0).

Torres-Ronda, L., Ric, A., Llabres-Torres, I., de Las Heras, B., & Schelling I Del Alcazar, X. (2016). Position-Dependent Cardiovascular Response and Time-Motion Analysis During Training Drills and Friendly Matches in Elite Male Basketball Players. *Journal of Strength and Conditioning Research / National Strength & Conditioning Association, 30*(1), 60–70. https://doi.org/10.1519/JSC.0000000000001043