A NOVEL METHOD TO MONITOR LOWER LIMB MUSCLES FLEXIBILITY IN YOUNG ELITE ATHLETES: IS IT EXAMINER-DEPENDENT?

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Introduction Lack of flexibility and muscles length imbalances can increase injury risk in soccer[1]. Most flexibility tests are subjectively defined by subject's tolerance. We have developed a new method using standardized stretch force[2]. While the reliability of this method has been described (day-to-day CV 2.6-12.4%), whether switching staff can affect the results is unknown. The aim of the present study was to examine whether the reliability of the measures obtained through this method is examiner-dependent.

Methods Ten young male athletes (age: 15.3±1.6 yrs, body mass: 65.4±26.2 kg, height: 171.7±8.8 cm and 1.5±1.5 years from peak height velocity) training in a sport academy were evaluated on two occasions (3 days apart). The flexibility of 8 lower limb muscle groups was examined on both sides in two phases: a video capture of the measured angle by three distinct pairs of operators, and a computer-aided analysis of the video clips by three distinct analyzers. The reliability of the measures was assessed by calculating the typical error of measurement, expressed as a coefficient of variation (CV, 90% CI). Then, between-analyzers and between-operators differences in average CV were expressed as Cohen's d (90% confidence interval, 90% CI). No substantial difference was considered if Cohen's d < 0.2 and the 90% CI included zero.

Results & Discussion As illustrated in figure 1**,** there was no substantial difference in CV, either between operators or analyzers. There was no substantial difference between all possible analyzers/operators combinations. To our knowledge, this is the first time that the potential effect of various operator/analyzer combinations on the reliability of flexibility measures has been reported with such a method.

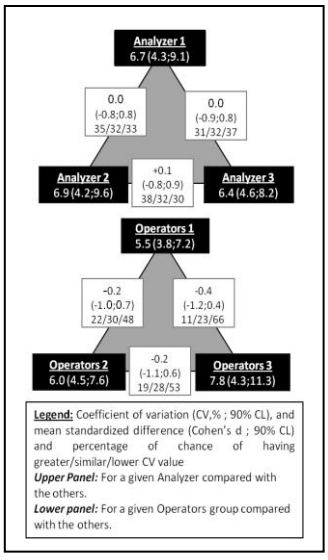

Figure 1. Measure of reliability for each analyzers / operators

Conclusion The reliability of the method to monitor flexibility was examiner-independent, which provides the option to switch staff without affecting the results. These findings reinforce the practical use of this method in soccer teams/academies and may be of interest in pre-season screening to identify players at risk of injury due to flexibility imbalances or deficits.

References

1. Witvrouw E. et al. (2003) Am J Sports med 2003 31: 41
2. Fourchet F. et al. (2011) IOC Medical Conference - Accepted abstract