

Do the strength levels predict the motor coordination in young basketball players?

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Introduction

Basketball it's an acyclic modality characterized by an intermittent effort, direction changes and an hypersolicitation of upper and lower limbs. Thus, it depends of a physical excellence to individual or collective performance improvement.

The aim of this study was to analyse the relation between the strength levels and motor coordination in young basketball players.

Methods

Sample: The sample of this study was composed by 12 basketball players with 15.83 (\pm 0.55) years old from the U-18 category. The players participate in the inter-regional, national championship round and national cup in 2015/2016 season.

Strength Evaluation: The upper limbs strength was evaluated with the push-up exercise, counting the number of repetitions in 30 seconds. The lower limbs strength was evaluated in centimetres with the horizontal jump without preparatory sprint.

Motor Coordination Evaluation: The motor coordination was evaluated with 6 cones separated by 1,5m in the diagonal. The athletes with ball, skirted the cones and ended with layup finalization, this exercise was measured in seconds. The exercises are presented in figure 1.

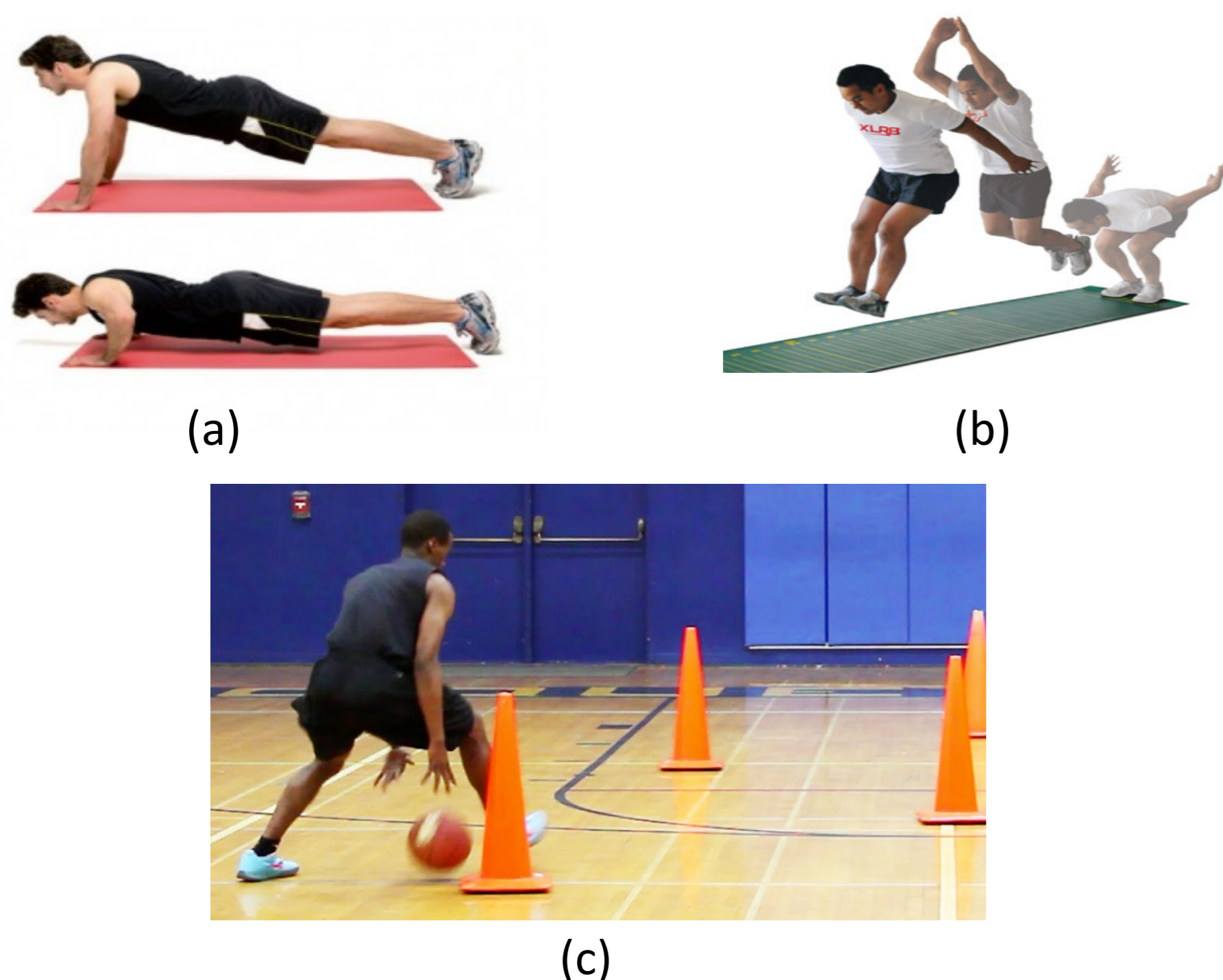


Figure 1: Example of the evaluation exercises, push ups (a), horizontal jump (b) and motor coordination exercise (c).

Statistical Analysis: The normality and homoscedasticity were assessed with Kolmogorov-Smirnov and Levene tests respectively. Spearman correlation test was accessed with a significance level of 5%.

Results/Discussion

Descriptive statistics are presented in table 1.

Variables	Mens and Standard Deviations
Age	15.83 (\pm 0.55)
Mass	73.67 (\pm 9.58)
Height	1.84 (\pm 0.08)
Wingspan	1.86 (\pm 0.08)
Upper Limbs Strength	31.58 (\pm 7.49)
Lower Limbs Strength	2.33 (\pm 0.21)
Motor Coordination	13.16 (\pm 0.27)

Figure 1: Means and standard deviations for Age (years), Mass (kg), Height (m), Wingspan (m), Upper and Lower Limbs Strength and Motor Coordination.

No significant correlation was observed between upper limbs strength and motor coordination ($F = -0,259$; $p = 0,208$). However, a negative significant correlation was observed between lower limbs strength and coordination was observed ($F = -0,539$; $p = 0,035$).

This results shown that strength levels in lower limbs may increase motor coordination performance. An improvement in lower limbs strength is related with a decrease in dribbling time the barriers with layup finalization. Thus, lower limbs strength development may induce also technic improvement.

Despite there is no significant relation with upper limbs and the coordination test, literature appoints that strength improvement may lead to a better coordination and technic improvement in upper limbs. The basketball needs would be supplied with a physical fitness improvement. A physical fitness development will lead to an individual better physical, technical and then tactical performance hence the team depends of the five players performance in the field.

Conclusion

Basketball coaches should perform specific strength training seasons intending to improve the motor coordination. Improving strength levels may contribute for motor coordination improvement.

References

1. Figueiredo, T., Espada, M., & Pereira, A. (2015). Análise da aptidão física entre jogadores masculinos juvenis de futsal e de basquetebol. *Medi@ções*, 3(2), 16-27.