

ASSESSING THE RELIABILITY OF A NEWLY DEVELOPED BASKETBALL SPECIFIC REACTIVE AGILITY TEST – A PRELIMINARY INVESTIGATION

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Introduction. Basketball is a team sport played on a court, with players switching their actions every few seconds. Basketball demands a lot of quick bursts of speed followed by periods of rest, so players need to be able to switch gears quickly. In particular, 8.8%, 5.3%, and 2.1% of play time are devoted to high-intensity motions including intense shuffling, sprinting, and jumping (Stojanovic et al.2018). Given change-of-direction tasks constitute 20.7% of sprinting activity in basketball, development of change-of-direction speed (CODS) is especially important in basketball players (Conte et al.2015).

Methods. The nature of the research was a quantitative analysis with a descriptive design. Players performed non-planned and planned tests 4 times randomly defined and equally divided on the left and right side for each testing. High level players, during the test were asked to perform basketball-specific actions such as sprinting, shuffling, close-out action and change of direction in a planned fashion or following a visual stimulus in the non-planned fashion. The test reliability was assessed using the coefficient of variation (CV), the intraclass correlation coefficient (ICC) and p value with T-Test. To determine reliability of test each player completed the newly developed test in a reactive and planned fashion on two separate occasions one week apart. There were 11 high level youth players who participated in all test sessions (age: 18 ± 1.0 years; stature: 198 ± 6.4 cm; body mass: 89 ± 4.7 kg). Proper dynamic mobility and stretching warm up for 10 minutes was created for players before testing to prevent possible injuries during the test. Players were familiarized with the test through explanation and demonstration of procedures before testing. Microgate (Bolzano, Italy) electronic device has been used to collect time information data for tests. Established spreadsheet methods were used to determine the change in the mean and reliability statistics (coefficient of variation [CV%], intraclass correlation coefficient [ICC] and T-Test) between trials for each test. Intraclass correlation coefficient values were interpreted according to the following criteria: poor reliability = 0.1–0.50; moderate reliability= 0.50–0.75; good reliability = 0.75–0.90; excellent reliability = 0.90–1.0. The coefficient of variation (CV) <10% was set as the criterion for an acceptable within-subject reliability, calculated as a ratio between SD and mean multiplied by 100. The best total time values were used for statistical analysis for each player.

Results

Test type and direction	CV (%)	ICC	T test (p)
Non-Planned Right	4.2	0.49	0.270
Non-Planned Left	2.5	0.74	0.002
Planned Right	3.5	0.68	0.576
Planned Left	3.5	0.56	0.432
Non-Planned Overall	3.5	0.62	0.050
Planned Overall	2.6	0.72	0.814

CV values were found between 2.5% and 4.2%, ICC values were found between 0.49 and 0.74, and T-test revealed $p=0.002$ and $p=0.814$ respectively in high level youth basketball team. CV values demonstrated acceptable reliability and ICC values showed moderate reliability. There was significant difference between results ($p=0.002$) for Non-Planned Left test which makes the test not reliable.

Discussion. This study investigated the reliability and usefulness of basketball-specific newly developed reactive agility tests in high level youth male basketball players. The results of this study showed «Non-Planned and Planned agility tests» were not reliable in high level youth basketball

players. It is challenging to make comparisons between our findings and those reported previously due to the lack of studies on basketball players' agility test performance. The Coefficient of Variation (CV) was found for high level youth team CV=2.5%-4.2%, which shows excellent reliability. Spasic et al. (2015) also found similar CV values (3%-4.8%) with Reactive Agility Test and CODS test in male handball players.

Conclusion. Our results showed that Non-Planned and Planned tests are not reliable in high level basketball players.

Keywords: changing of direction; reliability; agility test; reactive; basketball

References

1. Conte, D., Favero, T., Lupo, C., Francioni, F., Fabio, M., Capranica, L., Tessitore, A. (2015) Time-Motion Analysis of Italian Elite Women's Basketball Games Individual and Team Analyses. *Journal of Strength and Conditioning Research*, 29(1), 144–150, doi:10.1519/JSC.0000000000000633
2. Spasic, M., Krolo, A., Zenic, N., Delextrat, A., Sekulic, D. (2015) Reactive Agility Performance in Handball; Development and Evaluation of a Sport-Specific Measurement Protocol. *J. Sports Sci Med.* 14(3), 501–506.
3. Stojanovic, E., Aksovic, N., Stojiljkovic, N., Stankovic, R., Scanlan, A.T., Milanovic, Z. (2018) Reliability, Usefulness, and Factorial Validity of Change-of-direction Speed Tests in Adolescent Basketball Players. *Journal of Strength and Conditioning Research*, 33(11), 3162–3173 doi:10.1519/jsc.0000000000002666