

Role of BOMB Test in Shot Put Players Evaluation

Malika Nazish*, Saurabh Sharma**

Abstract

Medicine ball overhead throw test is a dynamic test to evaluate and assess the dynamic involvement of the trunk and upper body as a contributor to athletic performance. The reliability of the BOMB test has been found to be high. Medicine ball throws involves, multidimensional, functional training that use a varied muscle activity sequences and velocities. The ball throw test is serving as talent selection and evaluation for power in these sports athlete. Therefore, Medicine ball tests have several advantages: they are relatively affordable field tests, they give a high degree of testing flexibility, and a lot of information can be derived from the test results when evaluated properly. However very limited research work is done in the event of shot put and considering this further work is required in this a athletic event.

Key words- BOMB Test; Shot Put; Functional Training.

Introduction

Nowadays, sports is considered to be event but also as image lifter of the nation, amongst all sports athletics is one of the most popular sports. The world events are successful only because of athletes [1,5] the requirements of the game/sports require varied skill and conditioning limits. Track and field events have a huge requirement of muscle power generation [19]. Training programs should aim at increasing at increasing force and velocity to develop power [7,8] Medicine ball throw test are generally used to test the power of the kinetic chain of the body. The explosive power is produced by the lower quadrant and must be conducted smoothly through the kinetic chain to execute a skill successfully. Any athletic activity that involves a amalgamation of strength and speed will usually have explosive power as a feature for the successful execution of its required skills [13]. As in shot put technique athlete require both speed and power for execution of the proper throw. And BOMB is the valid tool for

assessing power. Therefore, we are reviewing the role of BOMB test in shot put players evaluation.

As we all know shot put throwing is one of the most popular games in the athletics which needs a power full strength in the upper extremity to throw a metal ball with the one hand. Shot put is an extremely complex and dynamic stereotype requiring the optimal interaction of movements of individual segments and interaction of strength and power. As power is the application of strength with speed. The quest for the development of power as a means to better sports performance is insatiable. Training methods to improve power have had a spectrum shift from heavy resistance training to light resistance training to plyometrics where the acceleration and deceleration of the body is the overload. Above mentioned methods have given result but the results have not always been in line with the training time invested. As we all know that BOMB (backward overhead medicine ball throw) test is the reliable and valid test for determining the power of the upper extremity. Medicine ball throwing correlates with upperbody strength as well as with throwing and hitting ability [3,4,16,18]. The reliability is well proved by Stockbrugger and Haennel [16] of the BOMB test was high (interclass correlation coefficient = 0.86). Tests of explosive power involving the upper quadrant that assess the dynamic involvement of the trunk and upper body to athletic performance are becoming more acceptable [17]. The implication for practitioners in using the medicine ball throw for

Author Affiliation: *Malika Nazish, MPT student, Jamia Millia Islamia, New Delhi. ** Saurabh Sharma, Assistant professor CPRS, Jamia Millia Islamia, New Delhi -110025.

Reprint Request: Saurabh Sharma, Assistant Professor, Centre for Physiotherapy and Rehab Sciences, Jamia Millia Islamia, New Delhi -25.

E-mail: saurabh14332003@yahoo.com

children aged 5–6 years is that the medicine ball throw seems to be a reliable field test of upper body strength for that age group [1]. Medicine ball throw tests have several advantages: they are inexpensive, they offer flexibility in testing, and they can provide physical education teachers with information on the effectiveness of strength programs for children [16]. But according to Mayhew et al [9] showed that the BOMB throw may have limited potential as a predictor of total body explosive power in college football players. They studied that peak and average powers generated during the vertical jump correlated moderately but significantly with the best BOMB throw distance ($r = 0.59$ and 0.63 , respectively). Considering power relative to body mass or lean body mass failed to produce significant correlations with BOMB throw distance ($r = 0.27$ and 0.28 , respectively).

In relation to core strength the study done by Chris Sharrocket al [14], results of this pilot study suggest that weakly significant relationship is present between the double leg lowering test as a measure of core stability and the medicine ball throw. Top performers demonstrated a stronger, significant correlation between these tests as compared to bottom performers. The data for males was better than females.. Although there was limitation of that study was that possible limitations in this study include the absence of height and weight measurements for the subjects used in the study chances are that there is a relationship between variables. Another study done by Okada et al [10] tried to find out the relationship between core stability, functional movement and performance, and the alternative aim was to explore assessment tests that best predict, performance and interestingly, BOMB did not have significant correlations with any of the core stability variables. This may be caused by the different components tested. The core stability is used to measure muscle endurance, whereas BOMB is used to assess explosive power. During BOMB, the core muscles quickly contracted to produce explosive power, so muscle endurance does not appear to impact the task. Significant positive result (BOMB vs. hurdle step, push-up, and Rotatory stability). They give the possible reasons for these results may be body coordination patterns or body movements. For example, BOMB recruited similar body coordination and movement patterns as hurdle step, push-up, and Rotatory stability. This indicates that both tests required great total-body coordination and integration. In addition, both BOMB and Push up occurred in the sagittal plane while maintaining a symmetrical body motion. Similarly, stability and mobility combined with body coordination and integration were important for better throwing

distance; they contribute to efficiently transfer the kinetic energy through a kinetic chain and prevent an “energy leak” while performing the task [16].

Medicine ball throws involves, multidimensional, functional training that use a varied muscle activity sequences and velocities. The dynamic nature of standing medicine ball throws has increased their use as a training tool because they integrate the whole body into each movement task. Newer methods of using medicine ball are being explored to develop newer and better training programs [17]. Explosive power generation using medicine ball throws involves high levels of reactive neuromuscular control [1]. It also demands high levels of proprioception and coordination, with movement often occurring through multiple planes [1]. To assess athletic ability during this type of activity, testing may also need to involve integrated, multidimensional movement that simulates as closely as possible the activities required for success in a particular sport [1]. The use of an integrated total-body movement task may be an important tool in assessing the ability of athletes to transfer the training effect of upper- and lower-body strength and power into the necessary functional movements in their sport and optimize performance. It is recommended that medicine ball throws be incorporated into both the testing and training of athletes in all sports. The recommendation is that coaches find specific movement tasks that can be simulated with medicine ball throws and use these as both testing and training activities [17]. BOMB test carries an advantage over seated shot put as it an integrated functional pattern suited to shot put [5,12]. Stockbrugger et al [17] found in their research that the evidence from that study suggests that the relative contributions of upper- and lower-body strength and power to performance of the integrated, multidimensional movement task of a B-MBT will vary depending on athlete type. The performance characteristics necessary for volleyball and wrestling tend to express themselves as the key factors related to B-MBT throw distance. It is critical to judge specific performance requisites such as upper- and lower-body strength and power. It is also valuable to evaluate athletes in ways that integrate these characteristics to determine if they are able to effectively integrate the upper and lower body as well as strength and power characteristics to accomplish more complex, multidimensional movement tasks. And with the use of integrated total body movement tests combined with more specific activities, it may be possible to identify areas of specific weakness or areas where additional increases in strength and power may not add significantly to performance of

integrated multidimensional movements or sport-specific performance. The study result by reis et al [11] suggest that a combination of throwing tests (Over-Head Back Throw and Squat Double-Jump Front Throw) and heavy-lift tests (Bench Press, Half Squat and Power Snatch) may provide a good predictive power, as they could explain ~88% of the variance of the Shot Put performance with a relative error of ~2.7%. This is one and only a pilot study that validates the medicine ball throw test in shot put players. The other studies done are generally on sports and games and on different population. In relation to shot put medicine ball throw test are serving as talent selection and evaluation for power

in these sports athlete [6]. Therefore Medicine ball tests have several advantages: they are relatively affordable field tests, they give a high degree of testing flexibility, and a lot of information can be derived from the test results when evaluated properly [16].

Conclusion

As after studying the literature we found there is dearth of this important test in shot put athlete. Therefore, our purpose of this review is to find out the role of BOMB test in evaluation of shot player especially in females.

Fig. 1: showing starting and ending position of BOMB test



References

1. Clark, M.A. Integrated Training for the New Millennium. Thousand Oaks, CA: National Academy of Sports Medicine, 2001.
2. Davis, Kathryn L., et al. "Validity and reliability of the medicine ball throw for kindergarten children." *The Journal of Strength & Conditioning Research* 22.6 (2008): 1958-1963.
3. Debanne T, Iaffaye G ; Predicting the throwing velocity of the ball in handball with anthropometric variables and isotonic tests. *J Sport Sci* . 2011 ; 29(7) : 705 - 713
4. Häkkinen K. Changes in physical fitness profile in female volleyball players during the competitive season. *J Sport Med PhysFit* .1993 ; 33(3) : 223 - 232.
5. Häkkinen, K. Maximal force, explosive strength and speed in female volleyball and basketball players. *J. Hum. Mov. Stud.* 16: 291-303. 1989.
6. Jones, Max, BAF Chief Coach—Throws, and Great Britain. "Talent selection in throwing events." *Athletics coach* 30 (1997): 16-19.

7. Judge, L.W. (2007) Developing speed and strength: In-season training program for the collegiate thrower. National Strength and Conditioning Association 29, 42-54.
 8. Kawamori, N. and Haff, G. (2004) The optimal training load for the development of muscular power. Journal of Strength and Conditioning Research 18, 675-684.
 9. Mayhew, Jerry L., et al. "Comparison of the backward overhead medicine ball throw to power production in college football players." The Journal of Strength & Conditioning Research 19.3 (2005): 514-518.
 10. Okada, Tomoko, Kellie C. Huxel, and Thomas W. Nesser. "Relationship between core stability, functional movement, and performance." The Journal of Strength & Conditioning Research 25.1 (2011): 252-261.
 11. Reis, Victor M., and Artur J. Ferreira. "The validity of general and specific strength tests to predict the Shot Put performance—a pilot study." International Journal of Performance Analysis in Sport 3.2 (2003): 112-120.
 12. Roetert, E.P., T.J. McCormick, S.W. Brown, AND T.S. Ellenbecker. Relationship between isokinetic and functional trunk strength in elite junior tennis players. Isokin. Exerc. Sci. 6: 15–20. 1996.
 13. SALE, D.G. Neural adaptations to strength training. In: Strength and Power in Sport. P.V. Komi, ed. Oxford: Blackwell Scientific Publications, 1992.
 14. Sharrock, Chris, et al. "A pilot study of core stability and athletic performance: is there a relationship? International journal of sports physical therapy 6.2 (2011): 63.
 15. Singh, Pritam, et al. "A Comparative Analysis of Motor Fitness Components of Throwers: A Foundation for Success." Research Journal of Physical Education Sciences ISSN 2320: 9011.
 16. Stockbrugger BA, Haennel RG. Validity and reliability of a medicine ball explosive power test. J Strength Cond Res. 2001; 15(4): 431-438.
 17. Stockbrugger, Barry A., and Robert G. Haennel. "Contributing factors to performance of a medicine ball explosive power test: a comparison between jump and non-jump athletes." The Journal of Strength & Conditioning Research 17.4 (2003): 768-774.
 18. Viitasalo J. Evaluation of explosive strength for young and adult athletes. Res Q Exercise Sport .1988; 59(1): 27- 28.
 19. Zatsiorsky, V et.al ;Biomechanical analysis of shot putting technique. Exercise in Sports Science Review 1981; 9: 353-389.
-