

A Comparison of Muscle Activity during Exercise with the Bodyblade® and Medicine Ball

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Overall Findings

This research demonstrates:

- *Overall, the Bodyblade® demonstrated greater muscle activation than the use of a medicine ball. On average, the Bodyblade® resulted in 144% greater muscle activation than the same exercise performed with a medicine ball.*
 - *The greatest effects measured in this research were seen in the upper body and core musculature.*
 - *The Bodyblade® represents a greater exercise stimulus than a conventional resistance implement.*
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Methods

Fourteen healthy adults (6 men, 8 women) ages 18-45 years volunteered to perform three different exercises while employing either the Bodyblade® PRO or an 18-pound medicine ball. The exercises consisted of squats, front lunges, and side lunges. Average activation (uV) of muscle tissue was measured over 30 seconds of performing each exercise via surface EMG measurement with the Myotrace 400 (Noraxon) portable measurement device. Surface EMG measurements were taken at the Sartorius (hip flex), rectus abdominus (ab), gluteus maximus (glute), and pectoralis major (chest).

Subjects performed three practice sessions to learn each exercise and ensure their ability to perform 30 seconds of each without interruption. If, during testing, the subject had to stop, the test was repeated to ensure 30 consecutive seconds of consecutive data for each exercise.

Results

The Bodyblade® resulted in 144% greater muscle activation than a medicine ball during the same movements. The chest, abdominal, and hip flexor muscle groups showed the greatest differences (441%, 33%, 90% respectively). Significant differences ($p < .05$) were identified in all three exercises for the Chest and Hip Flexor. Two of the three movements (Squat and Side Lunge) were found to differ significantly in the Abdominal and none of the three differed in the gluteus maximus activation.

Implications for Exercise Prescription

The differences measured between the Bodyblade® and the medicine ball has several important implications when considering exercise protocols. It is apparent that, overall, the Bodyblade® is the preferred implement during these specific movements. The Bodyblade® requires greater core muscle activation during these movements along with upper body muscle integration. This response represents a more functional physiological stress as many of life's activities involve upper body contractions, core activation, and lower body stabilization.

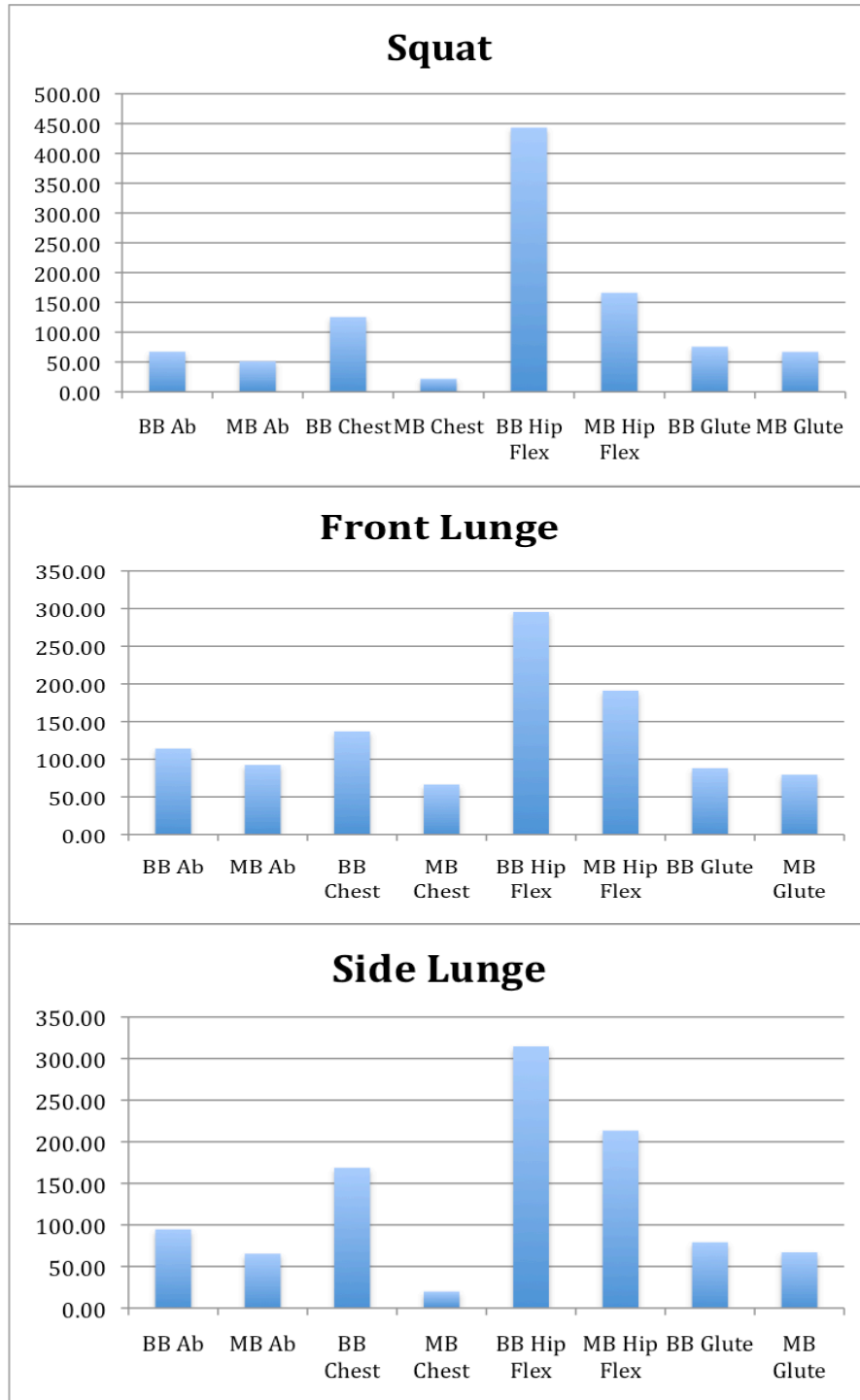
Another important consideration is the added balance and stability required to perform lunges and squats with the Bodyblade® as compared to the medicine ball. The ballistic, dynamic nature of these movements combined with the Bodyblade® stimulus represents a great exercise stress that is expected to result in superior developments in muscle coordination, balance, and dynamic stability.

Table 1: EMG Data

	Squat							
	BB Ab	MB Ab	BB Chest	MB Chest	BB Hip Flex	MB Hip Flex	BB Glute	MB Glute
Avg	67.37	51.26848654	125.41	22.0057447	443.26	166.0945943	75.70	67.05704449
SD	23.17	29.03927523	43.21	16.19902254	141.23	65.35188877	25.85	32.38267293
p value		0.02		0		0		0.47
	Front Lunge							
	BB Ab	MB Ab	BB Chest	MB Chest	BB Hip Flex	MB Hip Flex	BB Glute	MB Glute
Avg	114.15	92.44402748	136.95	66.42534635	295.61	191.1054177	88.09	79.45811209
SD	40.23	49.88264615	39.93	42.92407775	82.86	130.402759	44.46	41.02629981
p value		0.26		0		0.03		0.62
	Side Lunge							
	BB Ab	MB Ab	BB Chest	MB Chest	BB Hip Flex	MB Hip Flex	BB Glute	MB Glute
Avg	94.66	65.40849506	168.67	19.92093368	314.66	213.3988552	79.14	67.00142857
SD	46.51	41.21408656	71.94	10.79640406	85.31	113.3543326	20.70	27.72431503
p value		0.05		0.00		0.00		0.12

BB: Bodyblade®; MB: Medicine Ball (18 pounds)

Muscle Activation in Specific Muscle Groups during Different Exercises (uV)





Disclaimer

Bodyblade® units were provided for the completion of this research; however, the equipment manufacturer provided no financial compensation or support. This report may not be altered in any way.