

## Muscle Activation Comparisons in a Lat Pull down Exercise with Machine Weights, Resistance Bands and Body Weight Exercises

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**Abstract :** The aim of this study was to compare muscle activation of the latissimus dorsi between pin-loaded machine (Lat Pull Down), resistance band (Lat Pull Down) and body-weight (Chin Up) exercises. A convenient sample of male college students with >2 years resistance training experience volunteered for the study. A paired t-test with repeated measures designs was carried out on results from EMG analysis. EMG analysis was conducted with Trigno wireless sensors (Delsys) placed laterally on the latissimus dorsi (left and right) of each participant. By conventional criteria the two-tailed P value suggested that differences between pin-loaded and body-weight was not significantly different ( $p = 0.93$ ) and differences between pin-loaded and resistance band was not significantly different ( $p = 0.17$ ) in muscle activity. In relation to conventional criteria the two-tailed P value suggested differences between body-weight and resistance band was not quite significantly different ( $p = 0.06$ ) in muscle activity. However, effect size trends indicated that both body-weight and pin-loaded exercises were more effective in stimulating muscle electrical activity than a resistance band with male college athletes with >2 years resistance training experience. Although, resistance bands have increased in popularity in health and fitness centres, that for well-trained participants, they may not be effective in stimulating muscles of the latissimus dorsi. Therefore, when considering equipment and exercise selection for experienced resistance training participants pin-loaded machines and body-weight should be prescribed.

**Keywords :** pin-loaded, resistance bands, body weight, EMG analysis

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