The Single Arm Bench Press Test as a Return to Sport Assessment

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Introduction

- The Y-balance test, seated single arm shot put, and closed kinetic chain upper extremity stability test are used to determine the progress status of the athlete's injured tissues and readiness to return to competition at a safe level.
- The seated single arm bench press could be used as a functional outcome test by measuring functional pushing strength of the upper extremity.

Purpose

- The purpose of this study is to correlate the performance on the seated single arm bench press test to the Y-balance test, seated single arm shot put, and closed kinetic chain upper extremity stability test.

Hypothesis

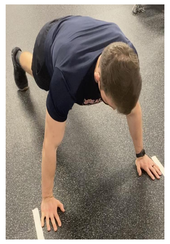
- The seated single arm bench press will have a weak correlation with the previously mentioned tests due to its ability to better isolate strength; a quality that the other tests lack the ability to do.

Methods

- Study design
  - Correlational cross-sectional study of the relationship between the four upper extremity functional tests listed below with the corresponding muscular focus.
- Participants:
  - 27 healthy males and females between 18 and 30 years old
  - No injuries, surgeries, or rehabilitation for the upper extremities in the past year.
- Statistical Analysis:
  - The Pearson correlation coefficient (r)
  - Data was normalized to participants body weight when appropriate.

Seated Single Arm Bench Press (Strength)

Seated Single Arm Shot Put (Power)



Closed Kinetic Chain UE Stability Test (Muscular Endurance)

Upper Quarter Y-Balance Test (Stability)

Results

- All correlations between the single arm bench press and the other upper extremity tests were low and ranged from r = .002 to r = .451
- There was one significant relationship
  - % dominant/nondominant single arm bench press and % dominant/nondominant single arm shot put

Table 2: Correlations (Pearson's r)	Dom BP	ND BP	% Dom/ND BP
Dominant SP	.188	.196	-.025
Non-Dominant SP	.197	.259	-.273
% Dom/ND SP	-.016	-.114	**.451**
CKCUEST	.092	.146	-.158
Dom Y Medial	.357	.336	.080
ND Y Medial	.243	.240	.001
% Dom/ND Y Medial	.104	.075	.137
Dom Y SL	-.069	-.097	.138
ND Y SL	-.058	-.056	.002
% Dom/ND Y SL	.063	.013	.229
Dom Y IL	-.093	-.101	.161
ND Y IL	-.088	-.060	-.011
% Dom/ND Y IL	.015	-.056	.331
Dom Y Composite	.055	.033	.146
ND Y Composite	.024	.034	-.003
% Dom/ND Y Composite	.067	-.005	.329

Note: **Bold:** significant at < 0.05; Dom: Dominant arm; ND: Nondominant arm; BP: bench press; SP: shot put; Y: Y balance test; SL: superolateral; IL: inferolateral

Conclusion

- Our hypothesis that the single arm bench press is better able to isolate strength separately and there would be low correlations with the other tests was supported
- Future research:
  - Compare results with an overhead athlete population
  - Longitudinal studies to establish if the single arm bench press can be used to identify athletes at risk for injury/re-injury

Hammer Strength Plate-Loaded Seated Chest Press Machine[1]

References

1. Plate-Loaded ISO-Lateral Wide Chest. Life Fitness. https://www.lifefitness.com/en-us/catalog/strength-training/plate-loaded/plate-loaded/plate-loaded-iso-lateral-wide-chest.