

Author Year; Country Score Research Design Total Sample Size	Methods	Outcome
<p>Craven et. al, 2017 Canada Randomized Controlled Trial Level 1 N = 34</p>	<p>Population: 34 participants (26 men, 8 women) with chronic traumatic SCI; C2-T12; age: 55 years; TPI: 5 years; 13 AIS C, 20 AIS D.</p> <p>Outcome Measures: OC was measured with radioimmunoassay, CTX with Roche Elecsys© 2010 immunoassay using electrochemiluminescence immunoassay (Roche Diagnostics GmbH, Indianapolis, IN, USA) and serum sclerostin was measured by BIOMEDICA sclerostin ELISA (Alpca Diagnostics, Salem, NH, USA). All markers were assessed at baseline, and 4 months. Treatment: 45 min, 3x/week, 4 months.</p> <p><u>Control group (CONV):</u> aerobic (20-25 min, 3-5 Borg; arm or leg bicycling, walking in parallel bars or on the treadmill) and resistance training (2-3 sets of 12-15 maximum repetitions for muscles capable of voluntary contraction).</p> <p><u>FES-walking with body-weight support group:</u> open-loop FES (8-125 mA, 250-300 µs pulse duration, 20-50 Hz) over the quadriceps, hamstrings,</p>	<p>1. OC Range of Values prior intervention [mean±SD]: SCI CONV: 20.1 ± 8.3 ng/ml SCI FES-walking: 16.7 ± 6.5 ng/ml Range of Values post-intervention [mean±SD]: SCI CONV: 20.7 ± 8.6 ng/ml SCI FES-walking: 17.8 ± 6.2 ng/ml Normal Range: 24-70 ng/mL for men 18-30 years; 14-42 ng/mL for men 31-50 years; 14-46 ng/mL for men 51-70 years and 11-43 ng/mL for premenopausal women 15-46 ng/mL for postmenopausal women MCID/LSC: CV was ~8%</p> <p>2. CTX Range of values prior intervention [mean±SD]: SCI CONV: 0.24 ± 0.21 ng/ml SCI FES-walking: 0.26 ± 0.15 ng/ml Range of Values post intervention [mean±SD]: SCI CONV: 0.27 ± 0.18 ng/ml SCI FES-walking: 0.24 ± 0.17 ng/ml</p>

	<p>tibialis anterior and gastrocnemius while walking with body weight support.</p>	<p>Normal value: 0.155–0.873 ng/mL for men 18–30 years; 0.093–0.630 ng/mL for men 31–50 years; 0.035–0.836 ng/mL for men 51–70 years and 0.025–0.573 ng/mL for premenopausal women and 0.104–1.008 ng/mL for postmenopausal women. MCID/LSC: CV was < 10% Important association: -</p> <p>3. Sclerostin Range of values prior intervention [mean±SD]: SCI CONV: 58.3 ± 12.4 ng/ml SCI FES-walking: 52.9 ± 16.8 ng/ml Range of Values post intervention [mean±SD]: SCI CONV: 61.1 ± 13.5 ng/ml SCI FES-walking: 54.3 ± 20.1 ng/ml Normal value: 0 - 240 pmol/l MCID/LSC: run replicates were <12.5% Important association: -</p>
<p>Invernizzi et. al 2015 Italy Case-Control Study Level 3 N=43</p>	<p>Population: 28 participants (23 men, 5 women) with chronic SCI; AIS A-C; C5 – T12; age: 40.5 ± 7.1 years; TPI: 90.8 ± 53.1 months; 24 paraplegic, 4 tetraplegic, 22 motor complete and 6 motor incomplete SCI individuals. 15 healthy controls (5 men, 10 women; age: 28.4 ± 4.1 years).</p>	<p>1. Beta-CTX Range of values [mean±SD]: SCI: 461.7 ± 215.5 pg/ml Controls: 399.2 ± 223.9 pg/ml Normal value: - MCID/LSC: - Important association: -</p>

	<p>Outcome Measures: alkaline phosphatase (BALP), parathyroid hormone (PTH) and Beta-CrossLaps (Beta-CTX)</p>	<p>2. BALP Range of values [mean±SD]: SCI: 12.6 ± 4.0 mcg/l Controls: 11.6 ± 6.0 mcg/l Normal value: - MCID/LSC: - Important association: -</p> <p>3. PTH Range of values [mean±SD]: SCI: 43.9 ± 13.8 pg/ml Controls: 29.7 ± 6.9 pg/ml Normal value: - MCID/LSC: - Important association: -</p>
<p>Gaspar et. al 2014 Brazil Cross-Sectional Level 5 N= 46</p>	<p>Population: 29 sub-acute and chronic men with traumatic SCI; AIS A - B; T2 – T12; age: 32.7 ± 6.9 years; TPI: 5.3 years (range: 0.5 – 24). Control group: 17 non-disabled men (age: 31.9 ± 5.8 years).</p> <p>Outcome Measures: collagen type I C-terminal telopeptide (CTX) was measured using commercial chemiluminescence immunoassays (Elecsys Analyzers, Roche), alkaline phosphatase (BALP) was assessed by using a colorimetric method (ADVIA1650), PTH measured using an in-house electrochemiluminescence</p>	<p>1. CTX Range of values [mean±SD]: SCI: 0.439 ± 0.212 ng/ml Controls: 0.475 ± 0.556 ng/ml</p> <p>Normal value: 0.2 – 0.7ng/ml MCID/LSC: inter-assay CV was 4.7%, intra-assay CV of 4.6% Important association: There was a significant inverse relationship between the CTX values and the duration of injury.</p> <p>2. BALP</p>

	immunoassay	<p>Range of values [mean±SD]: SCI: 58.1 ± 11.9 Controls: 89.2 ± 10.6 Normal value: - MCID/LSC: - Important association: -</p> <p>3. PTH Range of values [mean±SD]: SCI: 34.3 ± 18.2 pg/ml Controls: 29.8 ± 8.1 pg/ml Normal value: - MCID/LSC: inter-assay CV was 13.4% and intra-assay CV of 5% Important association: -</p>
<p>Tan et. al, 2014 USA Cross-sectional Level 5 N = 27</p>	<p>Population: 27 men with SCI; age: 40.7±11.5 years; AIS A-C; C4 or lower; TPI: 13.2 ± 11.7 (range: 0.12 to 37.5) years; 19 paraplegic, 8 tetraplegic, 22 motor complete and 5 motor incomplete.</p> <p>Outcome Measures: Total OC and CTX were measured by electrochemiluminescence immunoassay on a 2010 Elecsys autoanalyzer Roche Diagnostics, Indianapolis, IN).</p>	<p>1. OC Range of Values [mean±SD]: SCI: 22.0 ± 7.5 ng/ml Normal Range: value: - MCID/LSC: CV was < 10% Important Associations: Maximal load was negatively associated with years' post-injury and adiponectin while it was positively associated with lower extremity lean mass</p> <p>2. CTX Range of values [mean±SD]: SCI: 0.377 ± 0.223 ng/ml Normal value: - MCID/LSC: CV was < 10%</p>

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* All data expressed as mean \pm SD, unless expressed otherwise.