Author Year Country Research Design PEDro Score Sample Size	Methods	Outcomes
Li et al. 2018 USA RCT PEDro=4 N=11	**Population:** Mean age=46.0±7.8 yr; Gender: males=10, females=1; Time since injury=21.8±6.3 yr; Level of injury: C=4, T=7, L=0; Severity of injury: AIS A=3, B=8, C=0, D=0. **Intervention:** Participants randomized into an 8-week combined exercise (Comb-Ex) group designed to challenge strength, power, and endurance, or an 8-week high protein (HP) Diet group that focused on maintaining a carbohydrate to protein ratio <1.5 and limiting fat to ~30% of total energy intake. **Outcome Measures:** Exercise adaptations (oxygen consumption (VO_2), strength, muscle fiber type), body composition (body mass, lean mass, fat mass, android fat mass), glucose homeostasis, fasting glucose concentration (FGC), insulin sensitivity, lipid profile (total cholesterol (TC), triacylglycerol, high-density lipoprotein (HDL), low-density lipoprotein (LDL)), inflammation profile (IFN- γ, IL-1B, IL-6, IL-8, IL-10, IL-12, and TNF-α), and intracellular muscle signaling (GLUT 4, AMP-activated protein kinase (AMPK), calcium/calmodulin-dependent protein kinase type II (CAMPKII), protein kinase B (Akt), and Atk substrate (AS-160)).	1. Comb-ex participants improved VO_2 peak significantly from baseline (p<0.05). 2. Comb-Ex participants improved their maximum voluntary upper body strength (p<0.05). 3. Comb-Ex participants had significant hypertrophy in the deltoid (p<0.05) and vastus lateralis (VL) muscles (p<0.05). 4. Comb-Ex participants had a significant shift in myofiber type from type IIx to type IIa muscle fibers (p<0.05). 5. Both groups significantly reduced their total body mass (p<0.05) and fat mass (p<0.05). 6. Neither group had significant changes in lean body mass or android fat mass (p>0.05). 7. Significant reduction in FGC in Comb-Ex group (p<0.05) but not in the HP Diet group (p>0.05). 8. Both groups saw a significant reduction for insulin area under the curve (AUC) (p<0.05). 9. No correlation between changes in body composition and changes in FGC and insulin AUC's. 10. No significant changes in TC, triacylglycerol, HDL or LDL (p>0.05). 11. No significant changes in IFN- γ, IL-1B, IL-6, IL-8, IL-10 and IL-12 for inflammatory profile in either group (p>0.05). 12. Significant reduction in TNF-α in both groups (p<0.05). 13. Comb-Ex group had significantly higher deltoid AMPK and CAMPKII than the HP diet group (p<0.05). 14. GLUT4 levels were significantly higher in the nonparalytic deltoid compared to the paralytic VL muscle in the Comb-Ex group (p<0.05). 15. Atk and AS-160 phosphorylation was significantly higher in the paralytic VL compared to the nonparalytic deltoid muscle in the Comb-Ex group (p<0.05).
	Effect Sizes: Forest plot of standardized mean differences (SMD ± 95%C.I.) as calculated from pre- and post-intervention data.	

<table>
<tr><th>Author Year
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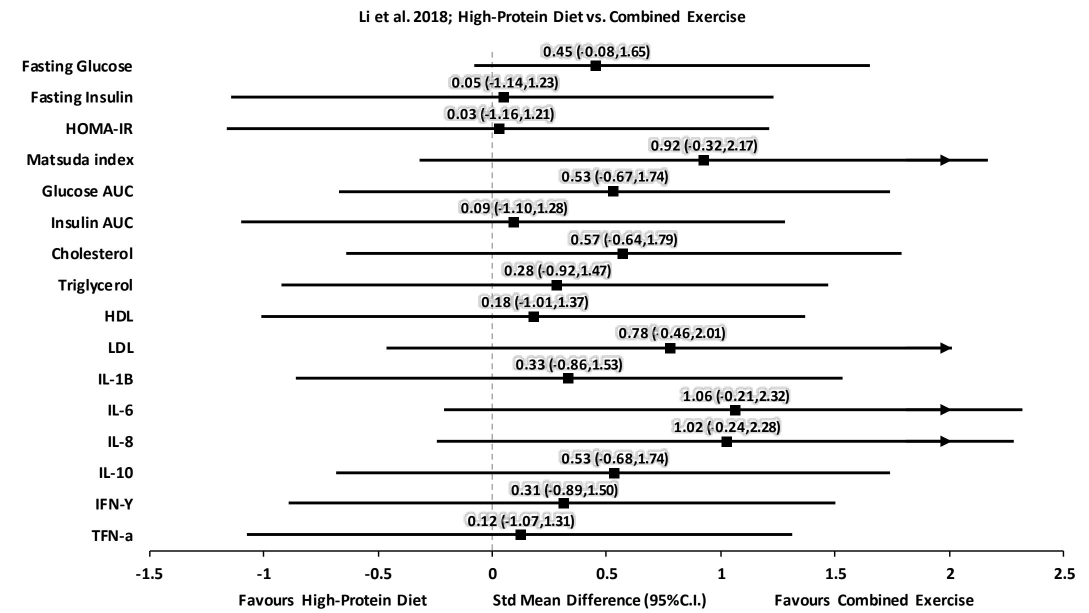
<tr><td></td><td colspan="2">


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<tr><td>Gorgey et al. 2012
USA
RCT
PEDro=6
N=9</td><td>Population: Treatment group (n=5): Mean age: 36 yr; Gender: males=5, females=0; Injury etiology: unspecified; Level of injury: cervical=4, thoracic=1; Level of severity: AIS A=3, B=2; Mean time since injury: 16 yr.
Control (n=4): Mean age: 33 yr; Gender: males=4, females=0; Injury etiology: unspecified; Level of injury: thoracic; Level of severity: AIS A=3, B=1; Mean time since injury: 8 yr.
Intervention: Participants were randomized to receive neuromuscular electrical stimulation resistance training and diet (treatment) or diet alone (control) over 12 wk. Training sessions were delivered 2 x/wk and involved leg extensions with increasing ankle weights (4 sets, 10 reps). Stimulation was delivered during training at 30 Hz and 450 μ, with 50 sec on and 50 sec off. Diets were composed of 45% carbohydrates, 30% fat, and 25% protein. Outcomes were assessed before and after treatment.
Outcome Measures: Weight, Body Mass Index (BMI), Cross-Sectional Area (CSA), Skeletal Muscle, Adipose Tissue, Fat-Free Mass (FFM), Fat Mass (FM), Cholesterol, Triglycerides (TG), Low-Density Lipoproteins (LDL), High-Density Lipoproteins (HDL), Free Fatty Acid (FFA), Glucose, Insulin, Insulin-Like</td><td>1. Weight and BMI were not significantly different between groups post intervention.
2. Based on MRI findings, there were significant differences (p<0.001) between treatment and placebo groups post intervention in mean skeletal muscle CSA for the thigh (78 versus 53 cm^2), knee flexor (35 versus 26 cm^2), and knee extensor (22 versus 16 cm^2).
3. Based on MRI findings, there was a significant difference between treatment and control groups post intervention in intramuscular fat (15% versus 31%, p=0.009); there were no significant differences between groups in CSA of visceral and subcutaneous adipose tissues.
4. Based on DXA findings, there were significant differences between treatment and placebo groups post intervention in mean leg FFM (7.5 versus 6.2 kg, p=0.03), leg %FM (28% versus 36%, p=0.02), and ratio of leg FFM to whole body FFM (0.15 versus 0.12, p=0.043); there were no significant differences between groups in FFM or FM of the whole body or trunk.
5. Based on DXA findings, significant interactions were observed due to increases in trunk FFM by 1kg in the treatment group (p=0.0001) and decreases in trunk %FM by 2% in the control group (p=0.0003).
6. Lipid profiles showed a significant difference</td></tr>
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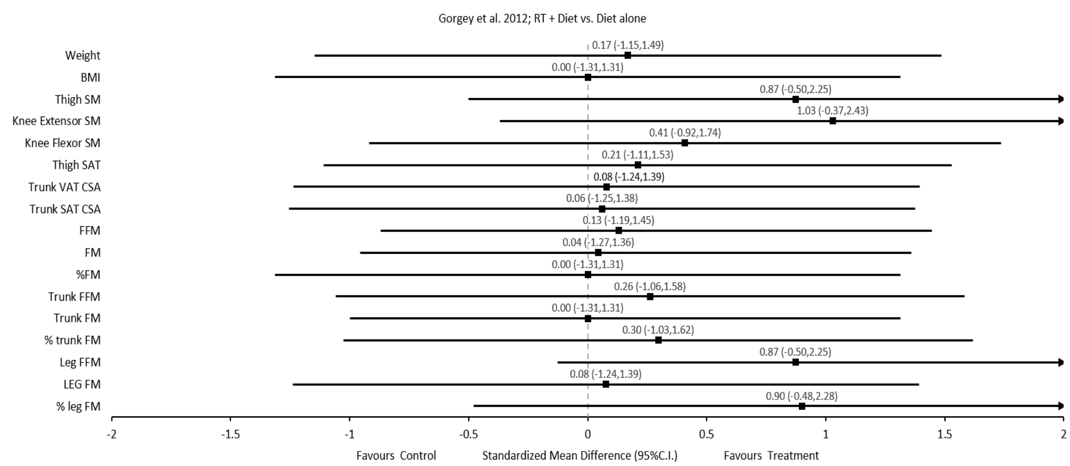
	Growth Factor 1 (IGF-1).	between treatment and placebo groups post intervention in mean levels of TG (87 versus 125 mg/dL, p=0.045) and cholesterol to HDL ratio (4.8 versus 5.2, p=0.017); there were no significant differences between groups in total cholesterol, LDL, HDL, or FFA. 7. Carbohydrate metabolism showed a significant difference between treatment and placebo groups post intervention in ratio of plasma insulin to plasma glucose (p=0.04); there were no other significant differences between groups in glucose or insulin. 8. IGF-1 was significantly correlated with knee extensor CSA (r=0.53, p=0.037) and visceral adipose tissue CSA (r=-0.56, p=0.023).
	Effect Sizes: Forest plot of standardized mean differences (SMD ± 95%C.I.) as calculated from pre- and post-intervention data. 	
Brochetti et al. 2018 USA Pre-Post N=18	**Population:** Mean age=55.7±13.0 yr; Gender: Not reported; Time since injury=9.1±10.7 yr; Level of injury: C=11, T=4, L=1; Severity of injury: AIS A=3, B=1, C=5, D=7. *2 participants had multiple sclerosis, so their data is not represented in level or severity of injury. **Intervention:** 18 overweight participants with SCI engaged in a 12-week interdisciplinary weight, food and lifestyle management program to observe its effects physical measurements. **Outcome Measures:** Body weight, waist circumference, body mass index (BMI), and diabetes risk scores.	1. Significant difference in weight from the program start to end (p<0.001). 2. Significant difference in waist circumference measurements from program start to end (p<0.001). 3. Pearson Moment Correlation determined that those with a higher BMI did not lose proportionally more weight than participants with a lower BMI (p<0.05). 4. Pearson Moment Correlation determined there was no relationship between age, weight loss and waist circumference (p>0.05). 5. Significant reduction in diabetes risk scores from program start to end (p<0.001).

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Betts et al. 2017 USA Pre-Post N=10	**Population:** Mean age=48.6±13.1 yr; Gender: males=6, females=4; Time since injury=18.8 yr; Injury etiology: SCI=6, Spina Bifida=2, Osteoarthritis/Joint Disease/Orthopedic Problems=2; Level of injury: Not reported; Severity of injury: Not reported. **Intervention:** Participants took part in a modified diabetes prevention program group lifestyle balance program to facilitate weight loss through lower caloric intake and higher aerobic activity. **Outcome Measures**: Body Weight, Body Mass index (BMI), Waist Circumference, Systolic Blood Pressure, Diastolic Blood Pressure	**1.** There were significant improvements over time for weight loss and BMI (p<0.05). **2.** There were no significant changes over time for blood pressure and waist circumference (p>0.05).
Chen et al. 2006 USA Pre-post $N_{Initial}$=17; N_{Final}=16	Population: Gender: males=9, females=7; Injury etiology: SCI=15, spina bidifda=1; Severity of injury: AIS A–D; Family history of overweight/obesity: yes=11, no=5. Intervention: Patients attended classes on nutrition, exercise and weight control/reduction for 12 wk (90 min/wk) and exercised for 6 wk (30-min). Outcome measures: Physiologic measures (weight loss, body mass index [BMI]), high density lipoprotein (HDL).	**1.** During the intervention 14 subjects lost weight (mean age=4.2 kg). **2.** Decreases were noted in BMI (p<0.050), waist circumference (p<0.001), neck circumference (p<0.020), and skinfold thickness (p<0.001). **3.** HDL decreased significantly (p<0.030). **4.** At follow-up, 6 continued to lose weight, 4 stabilized, and 3 gained.
Nightingale et al. 2017 United Kingdom Observational N=33	**Population:** Mean age=44.0±9.0 yr; Gender: males=27, females=6; Time since injury=15.0±10.0 yr; Level of injury: C=0, T=33, L=0; Severity of injury: AIS A=28, B=5, C=0, D=0. **Intervention:** Participants wore a physical activity monitor and completed a weighed food diary for 7 days consecutively. **Outcome Measures:** Physical activity monitor wear time, body mass, resting metabolic rate (RMR), energy expenditure variables (total energy expenditure (TEE), physical activity energy expenditure (PAEE), and physical activity level (PAL)), energy intake (total energy intake, macronutrient composition(percent protein, percent carbohydrate, percent fat)), number of days required to reliably estimate energy expenditure variables.	1. Significant main effect of physical activity monitor wear time for TEE (p=0.02), PAEE (p<0.001), PAL (p=0.003), sedentary time (p=0.017), and light-intensity activity (p=0.003). 2. Level of injury was a significant covariate for TE (p=0.03), PAL (p=0.04), sedentary time (p=0.03) and moderate-to-vigorous physical activity (MVPA) (p=0.03). 3. Sex was also a significant predictor for TEE, PAEE, sedentary time, light and MVPA (all p<0.001). 4. Total energy intake decreased significantly from day 1 to 7 (p=0.01). 5. No significant change from day 1 to 7 on energy expenditure variables (p>0.23) or diet macronutrient composition (p>0.70). 6. Alcohol consumption was significantly higher for Friday and Saturday compared to the rest of the week (p<0.05). 7. Day of the week did not significantly affect energy expenditure variables or total energy intake (p>0.05). 8. Concluded that 1-4 days are required to reliably estimate energy expenditure variables and 4-24 days are required to estimate total energy intake

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		and macronutrient composition.