EFFECTS OF A 12-WEEK AEROBIC TRAINING PROGRAM UTILIZING KANGOO JUMPS™

S.N. Miller, J.E. Taunton FACSM, E.C. Rhodes FACSM, B.D. Zumbo, S. Fraser
J.M. Buchanan Exercise Science Laboratory, School of Human Kinetics, University of British Columbia, Vancouver, B.C. Canada.

ABSTRACT
Kangoo Jumps™ are a boot with a similar appearance to roller blade boots, with a cantilever spring system on the bottom as opposed to wheels. Kangoo Jumps™ are designed to dissipate the impact forces experienced through the ankles, knees, hips and back during running. PURPOSE: To investigate whether the use of Kangoo Jumps™ provides a greater cardiovascular improvement, with fewer injuries when compared to conventional runners in a walk/run program over a twelve-week period. METHODS: Thirteen subjects completed a 12-week, 3 sessions per week training program using normal running shoes (NG, age: 28.8 ± 4.7; 75.1 ± 25.2 kg), and twelve participants used Kangoo Jumps™ (KG, age: 25.4 ± 5.3; 67.4 ± 18.1 kg), also for a 12 week period. Peak oxygen uptake (VO₂ peak) was measured pre and post training program, using a continuous treadmill protocol. All data were analyzed using ANCOVA (D = 0.05), with age being co varied; injury rates were analyzed with Chi-square 2X2 table (D = 0.05). RESULTS: VO₂ peak significantly increased in the KG (7.8 ± 0.97 mL.kg.min⁻¹) compared with NG (1.3 ± 0.28 mL.kg.min⁻¹) (p< 0.05). NG also had a significantly greater incidence of lower leg injuries when compared to KG (G²(1)= 6.7, p<0.05). A criterion of 1-week missed training was required for all of the injuries. CONCLUSION: Training with Kangoo Jumps™ provides an effective means of improving aerobic capacity, and reducing the rate of injury when compared to training with normal running shoes.

INTRODUCTION
• Kangoo Jumps™: novel form of aerobic training, have a similar appearance to roller blade boots but differ in that they have a cantilever spring system on the bottom as opposed to wheels.
• Kangoo Jumps™ are designed to dissipate up to 60% of the impact forces experienced through the ankles, knees, hips and back during running.
• High running injury rates: 24-65% of runners experience a running related injury in a typical training year.
• Running imposes a ground reaction force of 2 to 2.5 times body weight with each step.
• Variety of aerobic training interventions and programs designed to reduce injuries and improve VO₂ peak.
• Improvements vary depending on factors such as initial fitness level, training intensity, frequency and duration of activity.
• Typical changes in VO₂ peak range from 5-10%.

PURPOSE:
• Assess the effectiveness of Kangoo Jumps™ as an exercise tool.
• The effectiveness of Kangoo Jumps™ to improve the aerobic capacity of participants has not yet been investigated.

HYPOTHESES:
• Subjects using Kangoo Jumps™ will have a greater improvement in cardiovascular fitness (VO₂ peak) and VT, compared with subjects wearing normal running shoes, after completion of a 12-week training program.
• Subjects wearing normal running shoes will have a greater incidence of injury than those wearing Kangoo Jumps™.

METHODS
• 25 volunteer novice runners
• NG: Group training with normal running shoes
• KG: Comparable group wearing Kangoo Jumps™ for training
• Program: 12 weeks in duration with 3 training sessions per week (‘In Training’)
• Walk/run program which consisted of gradual increase in duration of activity
• Measures:
  • Pre-intervention & Post-intervention
  • Height & Weight
  • VO₂ peak: Continuous treadmill protocol
  • Ventilatory Threshold (VT): Excess Carbon Dioxide (ExCO₂) graphs
• Statistical Analysis:
  • VO₂ peak & VT: Analysis of covariance (ANCOVA)
  • Injuries: Chi square (G²) 2X2 contingency tables

RESULTS
• Kangoo Jumps™: novel form of aerobic training, have a similar appearance to roller blade boots but differ in that they have a cantilever spring system on the bottom as opposed to wheels.
• Kangoo Jumps™ are designed to dissipate up to 60% of the impact forces experienced through the ankles, knees, hips and back during running. PURPOSE: To investigate whether the use of Kangoo Jumps™ provides a greater cardiovascular improvement, with fewer injuries when compared to conventional runners in a walk/run program over a twelve-week period. METHODS: Thirteen subjects completed a 12-week, 3 sessions per week training program using normal running shoes (NG, age: 28.8 ± 4.7; 75.1 ± 25.2 kg), and twelve participants used Kangoo Jumps™ (KG, age: 25.4 ± 5.3; 67.4 ± 18.0 kg), also for a 12 week period. Peak oxygen uptake (VO₂ peak) was measured pre and post training program, using a continuous treadmill protocol. All data were analyzed using ANCOVA (D = 0.05), with age being co varied; injury rates were analyzed with Chi-square 2X2 table (D = 0.05). RESULTS: VO₂ peak significantly increased in the KG (7.8 ± 3.5 mL.kg.min⁻¹) compared with NG (1.3 ± 2.8 mL.kg.min⁻¹) (p< 0.05). NG also had a significantly greater incidence of lower leg injuries when compared to KG (G²(1)= 6.7, p<0.05). A criterion of 1-week missed training was required for all of the injuries. CONCLUSION: Training with Kangoo Jumps™ provides an effective means of improving aerobic capacity, and reducing the rate of injury when compared to training with normal running shoes.

CONCLUSIONS
• Subjects using Kangoo Jumps™, as a novel aerobic training tool demonstrated greater cardiovascular improvement when compared with a group wearing normal running shoes.
• This study provides a preliminary assessment of the use of Kangoo Jumps™ as an exercise tool, and resulted in a guideline for the use of Kangoo Jumps™ as an addition to an aerobic training program.

FUTURE RESEARCH
• Kangoo Jumps™ could be used as an effective tool for intervention in rehabilitation of lower leg injuries.
• The effects of the ‘In Training’ running program on aerobic capacity improvement
• Running efficiency differences between the groups.