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Changes in lower limbs reaction forces symmetry after Spinal Manipulative Therapy (SMT)

Submission date
07/12/2017

Recruitment status
No longer recruiting

Registration date
12/12/2017

Overall study status
Completed

Last Edited
28/09/2021

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
With the increase of the competitiveness and continuous search for the best performance, several athletes have been suffering repeated with biomechanics overload, creating muscle problems that negatively influence muscle strength and range of motion, affecting physical and sports performance, in training or competitions routine. This reality is considered problematic and generates a wide area of interest, with a continuous demand for technologies and therapeutics options, in favor of physical performance enhancement and prevention of injuries in athletes of different levels, conditions and sports. Spinal manipulation (a therapy that is performed on the spine by chiropractors) combines moving and jolting joints and massaging. Currently very little is known about the effects of spinal manipulative therapy in terms of performance tests symmetry on asymptomatic athletes. The aim of this study is to measure lower limbs reactions forces symmetry of athletes before and after lumbar SMT, through of the use of commonly used performance tests.

Who can participate?
Athletes aged 18 to 35 older who have biomechanical dysfunction.

What does the study involve?
Participant undergoes a Performance Test Assessment before and after receiving single session of lumbar (SMT). Participants are assessed for their balance, symmetry and their reaction forces.

What are the possible benefits and risks of participating?
Participants may benefit from improvements in their symptoms. Participants may experience discomfort or injury during the SMT treatment.

Where is the study run from?
University of Lisbon (Portugal)

When is the study starting and how long is it expected to run for?
February 2017 to November 2017

Who is funding the study?
Minister of Education Brazil – CAPES (Brazil)

Who is the main contact?
Professor Bruno Alvarenga (Public)

Contact information

Type(s)
Public

Contact name
Prof Bruno Alvarenga

Contact details
Faculty of Human Kinetics - FMH (Biomechanics and Functional Morphology Laboratory (BFML)
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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
01

Study information

Scientific Title
Changes in lower limbs reaction forces symmetry after lumbar Spinal Manipulative Therapy (SMT) in asymptomatic athletes: A Pilot Study

Study objectives
Athletes have been exposed to an increasing training load and subsequent biomechanical overload due to a constant demand for performance enhancement. In this sense are observed an increased rate of musculoskeletal problems, including spinal biomechanical dysfunctions that are often asymptomatic. These dysfunctions are believed to negatively influence a wide range of mechanical and physiological parameters such as symmetry. Our hypothesis is if have causal association between lumbar SMT intervention and immediate changes of neuro-musculoskeletal system on performance tests assessments, namely in lower limbs reaction forces symmetry.

Ethics approval required

Old ethics approval format

Ethics approval(s)
Ethics Committee FMH (Faculty of Human Kinetics) - University of Lisbon, 19/09/2017, ref: 31 /2017

Study design
Pilot study interventional non-randomised single-session single-centre open label trial subgroup analysis

Primary study design
Interventional

Secondary study design
Non randomised study

Study setting(s)
Other

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use the contact details below to request a patient information

Health condition(s) or problem(s) studied
Asymptomatic conditions were required of athletes participants.

Interventions
Each participant undergoesa clinical and physical evaluation performed by one experienced health professional, to verify suitability for inclusion according to the eligibility criteria.

Lumbar SMT is performed on athletes participants between functional performance tests assessment, using Diversified techniques aiming to correct vertebral dysfunctional segments after clinical assessment.

Participants are asked to lay down prone on for spinal motion palpation analysis was performed in order to evaluate the presence of dysfunction in vertebral segments of lumbar spine . After that, SMT is performed with the athlete laying sideways while correction was done contacting the transverse process (mammillary) of the lumbar vertebrae, performing the lumbar roll technique, in all participants. SMT purpose is to correct spinal joints biomechanical dysfunctions using a high-velocity, low-amplitude movement, applied at the paraphysiological space, beyond the passive joint range of motion.

Intervention Type
Procedure/Surgery

Primary outcome measure
Lower Limbs Ground Reaction Forces measured by the force platforms 5 minytes after lumbar SMT intervention.

Secondary outcome measures
Kinetic Symmetry is measured using Symmetry Index (SI) at 5 min after lumbar SMT intervention.

Overall study start date
15/02/2017

Completion date
15/11/2017

Eligibility

Key inclusion criteria
1. Athletes who presented asymptomatic lumbar biomechanical dysfunction
2. From any gender
3. Ages between 18-35 years old

Participant type(s)
Healthy volunteer

Age group
Adult

Lower age limit
18 Years

Upper age limit
35 Years

Sex
Both

Target number of participants
13

Total final enrolment
13

Key exclusion criteria
1. Athletes with age superior to 35 years old
2. Have had any changes in their training routine or competition during the study
3. Those with previous spine surgery
4. Being treated at any time with manual therapy during the study

Date of first enrolment
15/03/2017

Date of final enrolment
15/05/2017

Locations

Countries of recruitment
Portugal

Study participating centre
University of Lisbon
Biomechanics and Functional Morphology Laboratory
Faculty of Human Kinetics - FMH
Estrada da Costa - Dafundo
Lisbon
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1499-002

Sponsor information

Organisation
University of Lisbon

Sponsor details
Faculty of Human Kinetics (FMH)
Biomechanics and Functional Morphology Laboratory (FMH)
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Sponsor type
University/education

Website
http://neuromechanics.fmh.ulisboa.pt/

ROR
https://ror.org/01c27hj86

Funder(s)

Funder type
Government

Funder Name

Minister of Education Brazil – CAPES

Results and Publications

Publication and dissemination plan
Planned submisision to publications in a high-impact peer reviewed journal. For it, our biomechanics laboratory team support the procedures and decisions for new approaches, and encourage to submit for registrations and submissions in international platforms, according manuscript publications recommendations. In this sense we expect to follow all requirements to submit to scientific journals about the theme and share consistent and relevant results for all public community.

Also through scientific presentations in congresses and conferences, our team would like to submit and present our work by Biomechanics and Functional Morphology Laboratory team (BFML) - University of Lisbon. Our common research interest is related development of experimental methodologies, modeling and simulation for the study of mechanical load on the musculoskeletal system; and also related on investigation of biomechanics effects of the application of Spinal Manipulative Therapy in recreational and elite athletes.

Intention to publish date
12/12/2017

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from the study contact. Each individual data (Individuals' biomechanical outcomes will be presented for study participants, showing outcomes related to performances tests symmetry and therapeutic intervention), will be share, starting from day 15/12/2017, under previous communication and solicitation by study contact responsable personal, as indicated.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Thesis results		15/03/2019	28/09/2021	No	No