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Effect of specific muscle mobilization on the angle of trunk rotation and range of rotation in the trunk-pelvis-hip complex in girls with idiopathic scoliosis

Submission date
28/11/2016

Recruitment status
No longer recruiting

Registration date
06/12/2016

Overall study status
Completed

Last Edited
19/10/2017

Condition category
Musculoskeletal Diseases

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

Plain English summary of protocol

Background and study aims
The spine is made up of a series of small bones called vertebrae. Scoliosis is a condition that causes the vertebrae to twist or rotate, causing the spine to curve sideways. There are several different types of scoliosis, however the most common type is known as “idiopathic”, which means that the exact cause is not known. Despite years of research, the mechanisms behind disease progression in scoliosis are unknown. In many patients, the only way to effectively treat the condition is surgically. Scientists are looking for the most effective treatment of scoliosis in children to avoid surgery. Physiotherapy is one of important elements of conservative treatment. Proprioceptive Neuromuscular Facilitation (PNF) is one of the techniques used in patients with various structural and motor (movement) problems. Previous studies showed a more limited range of spine rotation on one side of the body in scoliotic girls compared to girls without scoliosis. The differences were observed especially in girls with double, i.e. “S” shaped scoliosis. The aim of this study is to investigate the effectiveness of one-sided PNF rotational mobilisation in girls with double idiopathic scoliosis.

Who can participate?
Girls aged between 10 and 17 who have double idiopathic scoliosis

What does the study involve?
All participants undergo one sided PNF mobilisation. This takes place when the participants are lying down with their lower body turned. Mobilization consists of lower limb movement patterns combined with a relaxation technique and irregular breathing. The mobilization lasts for a total of approximately three minutes. Before and after the mobilisation, participants have the amount they are able to turn their body (trunk rotation) measured as well as their range of movement.

What are the possible benefits and risks of participating?
Participants may benefit from increased range of motion in their spine. There are no notable risks involved with participating.

Where is the study run from?
1. Center of Functional Rehabilitation ORTHOS, Warsaw (Poland)
2. Regional Children's Hospital, Jastrzębie Zdrój (Poland)
3. Children's Memorial Health Institute, Warsaw (Poland)

When is the study starting and how long is it expected to run for?
December 2014 to March 2016

Who is funding the study?
Investigator initiated and funded (Poland)

Who is the main contact?
Dr Agnieszka Stępień
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
1/2016

Study information

Scientific Title
The immediate effect of PNF specific mobilization on the angle of trunk rotation and Trunk-Pelvis-Hip Angle range of motion in adolescent girls with idiopathic scoliosis – a pilot study

Acronym
PNF ATR TPHA

Study objectives
Single unilateral muscle PNF mobilization, using bilateral leg patterns combined with contract – relax technique and asymmetrical breathing, decreases values angle of trunk rotation and increases range of rotation in the trunk- pelvis- hip complex.

Ethics approval required
Old ethics approval format

Ethics approval(s)
The Senate Research Ethics Committee at Józef Piłsudski University of Physical Education, 17/02 /2015, ref: SKE 01-04/2015

Study design
Multi-centre non-randomised study

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Idiopathic scoliosis

Interventions
After the first assessment of the participant, a unilateral PNF specific mobilization is performed in a supine position with a stable chest, flexed lower limbs and rotated lower trunk. The total duration of mobilization is approximately three minutes. PNF - bilateral lower extremity patterns (flexion to the right and extension to the left) are used in combination with “contract-relax” technique and stimulation of asymmetrical breathing. Three cycles of three isometric contractions against resistance for 5 seconds and active increased range of motion are applied. Next participants perform ten active movements of lower extremities – bilateral flexion to the right with a stable chest. The last phase of mobilization involves asymmetrical breathing, i.e. 5 slow inspirations and expirations. An angle of trunk rotation in the thoracic and lumbar spine and range of rotation in the trunk-pelvis-hip complex are measured as re-assessment.

Intervention Type
Other

Primary outcome(s)
Angle of trunk rotation (ATR) is meausred with a scoliometer at baseline and after mobilization

Key secondary outcome(s))
Active range of movement in the trunk-pelvis-hip complex in transverse plane is measured with a Rippstein plurimeter at baseline and after mobilization.

Completion date

31/03/2016

Eligibility

Key inclusion criteria
1. Female
2. Age 10-17 years
3. Double idiopathic scoliosis with a right-sided thoracic curve and a left-sided lumbar /thoracolumbar curve diagnosed on antero-posterior radiogram
4. Absence of systemic diseases

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Lower age limit
10 years

Upper age limit
17 years

Sex
Female

Key exclusion criteria
1. Other than idiopathic type of scoliosis
2. A spinal curvature with a Cobb angle of less than 10 degrees
3. Pain
4. A history of traumatic injury

Date of first enrolment
15/03/2015

Date of final enrolment
15/09/2015

Locations

Countries of recruitment
Poland

Study participating centre

Center of Functional Rehabilitation ORTHOS
Modzelewskiego 37
Warsaw
Poland
02-679

Study participating centre
Regional Children’s Hospital
ul. Krasickiego 21
Jastrzębie Zdrój
Poland
44-335

Study participating centre
Children's Memorial Health Institute
ul. Aleja Dzieci Polskich 20
Warsaw
Poland
04-730

Sponsor information

Organisation
Józef Piłsudski University of Physical Education

ROR
https://ror.org/043k6re07

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	06/09/2017		Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes