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Development of a haemophilia physiotherapy intervention for optimum musculoskeletal health in children

Submission date
07/09/2020

Recruitment status
No longer recruiting

Registration date
04/11/2020

Overall study status
Completed

Last Edited
04/11/2020

Condition category
Haematological Disorders

[X] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Children are born with haemophilia. Females carry the disorder and usually males are affected. It is a disorder affecting 1 in 10,000 people where the blood does not clot normally, leading to bleeding into muscles and joints. As a result, muscles become weak and joints become painful and difficult to move. “Being able to participate in games and activities with their friends” is one of the things that matters most to boys with haemophilia. At present, there is a lack of robust evidence to determine whether muscle strengthening exercise can improve or negatively affect outcomes for young children with haemophilia. With the help of boys with haemophilia, their parents and physiotherapists, the researchers have developed an exercise programme designed to increase muscle strength. This study aims to find out if the exercise programme might have an effect on joint pain and movement participation in games and activities and improve health in the long term.

Who can participate?
Boys aged between 6 and 12 with severe or moderate haemophilia

What does the study involve?
66 boys will be allocated to a group that is asked to complete a 12-week exercise routine to strengthen their leg muscles and another 66 boys to a group that does not do the exercises. The boys will be allocated at random, so that each boy has an equal chance of being in either group. The researchers will monitor the boys throughout the study by measuring their muscle strength, how far they can walk in 6 minutes and time taken to ascend and descend 12 steps. The researchers will also record how physically active the boys are using a wrist band as well as how satisfied they are with their health.

What are the possible benefits and risks of participating?
It is not known whether participants will benefit directly from participating in this study. However, the researchers will collect information which might improve future care for all patients with haemophilia including patients in this study. They do not expect any reactions or side effects of doing the exercises, but they cannot be certain. When muscles are worked harder

than they are used to, or in a different way, soreness in muscles may occur 1-2 days after exercise. This is common when starting an exercise programme and some people may notice some discomfort or aching in their muscles 1-2 days after doing exercises.

Where is the study run from?
This research is being organised by the Haemophilia Centre, East Kent Hospitals University NHS Foundation Trust. However, participants can participate at their local Haemophilia Centre.

When is the study starting and how long is it expected to run for?
September 2019 to September 2023

Who is funding the study?
National Institute for Health Research (NIHR) (UK)

Who is the main contact?
Dr David Stephensen
david.stephensen@nhs.net

Contact information

Type(s)
Scientific

Contact name
Dr David Stephensen

ORCID ID
https://orcid.org/0000-0002-6175-3343

Contact details
Kent Haemophilia Centre
East Kent Hospitals University NHS Foundation Trust
Canterbury
United Kingdom
CT1 3NG
+44 (0)1227866481
david.stephensen@nhs.net

Additional identifiers

Integrated Research Application System (IRAS)
282478

Central Portfolio Management System (CPMS)
47230

National Institute for Health and Care Research (NIHR)
201588

Study information

Scientific Title
Single-blinded two-arm pragmatic randomised controlled trial of an exercise intervention versus usual care in children with haemophilia

Acronym
DOLPHIN-II

Study objectives
A 12-week exercise intervention increases muscle strength of the dominant knee extensors more than usual care at 24 weeks in children with haemophilia aged 6-12 years.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 03/11/2020, South West - Cornwall & Plymouth Research Ethics Committee (Level 3, Block B, Whitefriars, Lewins Mead, Bristol, BS1 2NT, UK; +44 (0)2071048071; cornwallandplymouth.rec@hra.nhs.uk), REC ref: 20/SW/0154

Primary study design
Interventional

Study design
Single-blinded two-arm pragmatic randomized controlled trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Children with haemophilia

Interventions
Randomisation of eligible participants will be performed with the online randomisation service http://sealedenvelope.com/. Utilising the secure, centralised and independent service, participants will be randomly allocated into one of the two groups (treatment group 1: 12-week muscle strengthening exercise intervention; treatment group 2: usual physiotherapy care for 12 weeks) on a ratio of 1:1. Allocation will be stratified by centre to ensure the same numbers of participants at each site are allocated to the two groups. The unblinded principal investigator at each site will be issued with a password to access the service to create a new randomisation for study participants. The trial manager will oversee randomisations by site and over time.

Intervention Type
Behavioural

Primary outcome(s)
Muscle strength of the dominant knee extensors measured using maximum voluntary isometric contraction at baseline, 12 and 24 weeks

Key secondary outcome(s)

1. Muscle strength of the ankle plantarflexors and non-dominant knee extensors measured using maximum voluntary isometric contraction at baseline, 12 and 24 weeks
2. Physical function measured using the 6-minute timed walk, timed up and down stairs, triple hop and vertical jump tests at baseline, 12 and 24 weeks
3. Physical activity measured using daily step counts, sedentary time, time spent in moderate and vigorous-intensity physical activity using a wearable activity tracker at baseline, 12 and 24 weeks
4. Quality of life and QALY measured using the EuroQol-5D (EQ-5D) and Child Health Utility 9D (CHU9D) at baseline, 12 and 24 weeks
5. Safety and adherence assessed using adverse events, pain and exercise counts at 12 weeks
6. Intervention practicalities assessed using semi-structured interviews at the end of the intervention at 12 weeks

Completion date
30/09/2023

Eligibility

Key inclusion criteria
1. Diagnosis of severe or moderate haemophilia and registered with a UK Haemophilia Centre
2. Aged 6 – 12 years
3. Inhibitor or non-inhibitor
4. Able to follow simple verbal instructions and provide informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Lower age limit
6 Years

Upper age limit
12 Years

Sex
Male

Key exclusion criteria
1. Children 13 years or older (boys aged 13 years or older are excluded due to confounding effects of non-linear increases in neuromuscular maturation and muscle strength that occur in boys during puberty and adolescence)
2. von Willebrand disease
3. Past history of fracture or trauma to the lower limb
4. Past history of orthopaedic surgery of the lower limb

5. Past history of acquired brain injury
6. Past history of any other disturbance of the central nervous system
7. Joint or muscle bleed in the lower limb in the past 6 weeks
8. Presence of lower limb pain
9. Participants who are unable to fully comply with verbal instructions

Date of first enrolment
01/01/2021

Date of final enrolment
01/03/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Kent Haemophilia Centre
East Kent Hospitals University NHS Foundation Trust
Canterbury
United Kingdom
CT1 3NG

Sponsor information

Organisation
East Kent Hospitals University NHS Foundation Trust

ROR
https://ror.org/02dqqj223

Funder(s)

Funder type
Government

Funder Name
Research for Patient Benefit Programme - NIHR201588

Alternative Name(s)
NIHR Research for Patient Benefit Programme, Research for Patient Benefit (RfPB), The NIHR Research for Patient Benefit (RfPB), RfPB

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The dataset will not be made available. The study involves participants with a rare condition, and although the data will be anonymised, some participant-level data may result in deanonymisation. Data will be held on a secure database by the sponsor.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No