

# Interactive Virtual Reality System on Physiotherapy



## Investigating the viability and acceptability of an Interactive Virtual Reality (IVR) System on physiotherapy rehabilitation in paediatric Duchenne Muscular Dystrophy (DMD) patients

### Hub Summary

This study is looking at the use of Immersive Virtual Reality (IVR) to improve the uptake of physiotherapy amongst young people with DMD. The first phase will involve a design workshop to explore different scenarios on the IVR to mirror current DMD physiotherapy recommendations, with the second phase looking at testing of these scenarios by young people with DMD. The study is currently open to those patients currently being seen at Leeds Teaching Hospital and Sheffield Children's NHS Foundation Trust, and is being funded by The Children's Hospital Charity.

**Study Number:** Not on [clinicaltrials.gov](https://clinicaltrials.gov)

### Description by The Children's Hospital Charity (description by project team)

As part of the International Standards of Care for Duchenne muscular dystrophy, it is recommended that children with DMD undertake a daily stretching programme to maintain maximum muscle extensibility and optimise function. A lot of children are not motivated to perform these exercises, leading to earlier complications, reduced function and a poorer long-term prognosis.

Our collaborative research group has previously developed an interactive Immersive Virtual Reality (IVR) system to improve the delivery, engagement and success of physiotherapy for adult amputees, burns' patients and children with upper limb injuries. VR headsets have become more accessible in terms of price, usability and portability.

In a recent PPI survey, 78% of paediatric DMD patients stated that a VR system could improve physiotherapy engagement and performance. This study will investigate the feasibility and acceptability of an IVR device on paediatric DMD rehabilitation.

In phase 1 of this study, clinicians, physiotherapists, parents, carers and patients will participate in a co-design workshop to explore core VR rehabilitation scenarios. An IVR platform will be developed that will emulate current DMD physiotherapy. In phase 2, we will ask therapists and children to take part in testing the IVR platform. VR scenarios will be further developed and then tested in a trial with 16 DMD patients aged 5-10 years.

Pre and post-trial assessments will be performed to determine the effect of the IVR system on improving physiotherapy adherence, muscle strength testing, quality of life and anxiety. Qualitative interviews and questionnaires will be conducted with patients and clinical staff to obtain feedback on patient acceptability as well as practicality and acceptability of using IVR in a clinical setting.

This study will help determine if an IVR system can improve the physiotherapy of young patients with DMD. The study is being funded by The Children's Hospital Charity.

### Primary Outcome Measures

1. To develop a novel Immersive Virtual Reality (IVR) system for delivering physiotherapy regimes in patients aged 5-10 years with Duchenne Muscular Dystrophy.

### Secondary Outcome Measures

1. To assess the frequency and duration of use of an IVR platform for DMD physiotherapy.
2. To assess improvements in motor function, anxiety and quality of life in patients using an IVR platform for DMD physiotherapy.

## Trial Status Trial complete

**UK Locations**  
Leeds, Trial complete /terminated, Sheffield, Trial complete/terminated

**Trial Sponsor**  
The Children's Hospital Charity (description by project team)

**Length Of Participation**  
12 weeks

**Recruitment Target**  
16

**Ambulatory**  
Ambulant

**Therapeutic Category**  
Physiotherapy

**Age**  
5-10

**Mutation Specific**  
All treatment types

**Muscle Biopsy**  
No Muscle Biopsy Required

**MRI**  
No

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3. To determine the acceptability of using a new DMD-IVR device for delivering physiotherapy in children and young people.
4. To assess complications when patients use the DMD-IVR platform.
5. To determine parental views on the use of IVR to deliver DMD physiotherapy.
6. To determine healthcare professional (HCP) views on the use of IVR to deliver DMD physiotherapy

#### Can I take part?

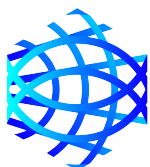
#### Inclusion Criteria

- ✓ Aged 5-10 years.
- ✓ Diagnosed with DMD and receiving lower limb physiotherapy care.
- ✓ Ambulant patients.
- ✓ Able to speak/understand English

#### Exclusion Criteria

- ✗ Physical or cognitive difficulties indicating the child would struggle to use the device or complete study activities.
- ✗ Outside age range.
- ✗ Non-ambulant patients.
- ✗ Facial injuries precluding the use of HMD.
- ✗ Issues relating to balance that could be affected by VR.
- ✗ Severe visual impairment.

For contact details and to find out more, please refer to [dmdhub.org](http://dmdhub.org).



**Duchenne  
UK**