

What's the Evidence?

Lycra Orthoses for Cerebral Palsy

Key findings

- There has been one randomised controlled trial of Lycra orthoses, which found that they have the potential to improve movement outcomes for children with cerebral palsy.
- However, this was a small trial with only 18 children.
- There haven't been enough well conducted studies of the same garment in groups of children with the same condition for us to be able to say that the evidence clearly shows that they do work.
- The lack of long-term studies makes it impossible to provide dependable advice about whether there is a risk of weakened muscles or any lasting benefit once a garment is no longer worn.

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What were we asked?

A parent of a young child with hemiplegia asked whether there was any evidence that Lycra suits are effective, as they had heard conflicting reports. They were concerned that it may weaken muscles, and also asked whether there is any ongoing benefit once suit is no longer worn.

What did we do?

We transformed the query into a research question, with a defined patient group, intervention and outcome:

Do Lycra orthoses (splints) improve function and movement ability in children with hemiplegia, or other types of cerebral palsy?

We searched for evidence in the Cochrane Library, TRIP database, guidance issued by the National Institute for Health and Clinical Excellence (NICE), NHS evidence and

PubMed. An updated search was carried out in April 2013.

What did we find?

- Lycra orthoses are a form of support which may benefit people with conditions affecting movement and posture, such as cerebral palsy.
- The NICE guidance on spasticity in children and young people states that orthoses may be considered for children with spasticity based on their individual needs, and aimed at specific goals.¹
- It is suggested that orthoses may help with improving posture, improving upper limb function, improved walking efficiency, preventing or slowing hip migration or development of contractures, and relieving discomfort or pain.
- Possible risks to be discussed with the child or young person and their parent or carer

include cosmetic appearance, and the possibility of discomfort or muscle wastage through lack of muscle use.

Although Lycra orthoses have been used for around 10 years, there are very few research studies that have looked at the effectiveness of these garments. There are some short-term before and after studies, but long term effectiveness has not been evaluated. There has been one randomised controlled trial of the effectiveness of Lycra garments.²

There are several 'review articles' that have tried to bring together the evidence from smaller studies.^{3,4,5} These three reviews include many of the same studies and surmise that current evidence suggests that wearing Lycra garments may improve stability, function and range of movement in the short term for some children with cerebral palsy but that the evidence is limited and difficult to compare.

There were lots of things about the studies that made it difficult for these review articles to draw conclusions.

- The studies had very few children participating (the number of children ranged from two to 24 depending on the study).
- The research designs lack adequate comparison to the Lycra orthoses, such as making the same observations on similar children that don't have Lycra garments to see what we would expect to happen anyway.
- The studies also differed in the way that they measured whether Lycra orthoses were having an effect. Some studies created their own measure, which means they can't easily be compared to the other studies.

The first randomised controlled trial of Lycra orthoses was published in 2011.²

- This study randomised 18 children aged 8 to 15 to receive either three months of wearing a Lycra splint, or three months of usual care.
- The study found that wearing an arm splint for three months resulted in arm movements that were significantly faster and smoother than controls.
- It was concluded that Lycra splinting has the potential to improve movement outcomes for children with cerebral palsy.
- However, this study involved a sample of only 18 children, and data from 16 children were included in the analysis.

While some children do seem to benefit from using Lycra orthoses, some families report difficulties with the garments for a number of reasons:

- They can be hard to get on and off;
- Children may feel hot and restricted in them;
- It can feel difficult to breath;
- Toileting may be a consideration with full body suits.^{4,6}

In some of the studies, the discomfort and inconvenience reported were bad enough that families stopped using the garments all together or as much as was recommended and some parents reported that the practicalities of using the garment would put them off using Lycra garments again.

There have not been any studies that have looked at whether Lycra garments enable children to participate more in a child's typical activities.

What do we think?

- The NICE guidance says that orthoses may be considered for some children, but it is not clear which children are most likely to benefit, and whether any benefits are sustained in the long term.

- The lack of long-term studies makes it impossible to provide dependable advice about whether there is a risk of weakened muscles or any lasting benefit once a garment is no longer worn.
- It is important to remember that this doesn't mean that Lycra orthoses don't work. It means that there haven't been enough well conducted studies of the same garment in groups of children with the same condition for us to be able to say that the evidence clearly shows that they do work.
- The researchers that wrote the review articles all said that randomised controlled trials were needed to properly assess the benefit of Lycra garments.

We would like to hear your feedback on this summary – please email us at pen cru@exeter.ac.uk if you have any comments.

References

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6. Healthcare Improvement Scotland. What is the clinical and cost effectiveness of dynamic elastomeric fabric orthoses (DEFOs) for cerebral palsy? NHS Scotland Technologies Scoping Report. 2013. Available here: http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/shtg_scoping_reports/technologies_scoping_report_14.aspx

Note: This information is produced by PenCRU researchers and reviewed by external experts. The views expressed are those of PenCRU at the University of Exeter Medical School and do not represent the views of the Cerebra charity, or any other parties mentioned. We strongly recommend seeking medical advice before undertaking any treatments/therapies.