Dynamic lycra splinting for children with cerebral palsy

Key Points

- Dynamic lycra splinting may improve functional abilities in the short term in some children with cerebral palsy.
- Suitability needs to be decided on a case by case basis.
- Further research is required to determine the long term effects of dynamic lycra splinting and which specific patient groups might benefit.
- No published evidence on the cost effectiveness of dynamic lycra splinting was identified.

**Epidemiology**

Cerebral palsy affects one in every 400 children with muscle spasticity occurring in about 80% of cases. There is no cure and therapies are aimed at increasing function and reducing long term disability.

**Health Technology Description**

It is believed that dynamic lycra splinting may benefit some children suffering from cerebral palsy and neuromuscular disorders such as muscular dystrophy by improving their balance, muscle control, proximal stability and movement. Dynamic lycra splints or suits consist of sections of lycra of varying thicknesses stitched together using specific tensions and directions of pull. Sometimes plastic boning is also added to give extra pressure and support. The splints are made to measure and are designed to meet the specific needs of the wearer. They can extend to the whole body or cover only a particular area eg hand and wrist. Unlike previous splints they are flexible not rigid, designed to move with the wearer and hence referred to as dynamic. Lycra splints can be used alongside other types of splints or replace them completely. As with other splints, they are likely to be used as adjuncts to other therapies such as physiotherapy. In the UK there are three suppliers of suits, but other dynamic lycra suits, based on similar principles are available overseas.

**Safety and Patient Issues**

Lycra splinting is contra-indicated when adequate monitoring and supervision are not available, there is deemed to be a lack of purposeful intent or if severe epilepsy or chronic respiratory problems are present.

Problems with comfort, reflux sickness, toileting and putting on/taking off the suit have been reported. Temperature can also be an issue, particularly in summer. These factors may all impact on compliance and motivation of the child. Problems can be alleviated to some extent by carefully assessing the needs of the child when fitting the garments, considering adding more zips and altering the boning of the garments, and changing the wearing regimen in hot weather. Flett et al. believe that despite these problems, the fit and appearance of these garments as compared to other orthoses can make them attractive to children.

The long term effects of wearing lycra suits are unknown. Attard and Rithalia state that further research is required to determine how much pressure is being applied to the skin and the body and the long term effects of this pressure.
Clinical Effectiveness

No systematic reviews were identified. An overview by Attard and Rithalia in 2004\(^3\) reported the results of nine primary studies on dynamic lycra suits, seven of which relate to children with movement disorders, mostly cerebral palsy. The studies are predominantly observational, with only one using matched controls. All are small with less than forty children, and of short duration. Only three of the seven relevant studies used validated assessment measures, the others devised their own measures or relied on observation. The difficulties of drawing conclusions given the limitations of this primary research are highlighted. However the authors report that the suits may have potential for use in children with cerebral palsy and offer most benefit when combined with a multi-disciplinary team approach to caring for the child and when a thorough pre-assessment of the suitability of the child for this treatment is undertaken.

A 2002\(^1\) review by the National Horizon Scanning Centre (NHSC) included five small primary studies, three of which feature in the Attard and Rithalia review and two additional studies. One of these studies\(^5,10,13\) was carried out by Edinburgh Sick Children's Hospital in 1999 in an attempt to determine local prescribing practice in relation to the suits. Functional improvements in 20 children, 10 wearing body suits and 10 arm splints, all supplied by Second Skin™ were monitored over a period of 8 months. It was found that not all children who completed the trial liked the suits or benefited from them, but some showed significant functional improvements. These results, as with other studies in this area, must be viewed with caution however due to the small size and short duration of the trial and the lack of controls. Overall the NHSC review concluded that there may be some short term benefit from the use of lycra splints, however there was no evidence to determine the long term continuation of benefit. The review also noted that, despite the lack of clear evidence of effectiveness, patients and carers are likely to welcome the suits as an extra therapeutic option available to them, and appreciate any benefit that they experience however short term.

The need for further research to better understand the functioning of the suits, their longer term effects and to examine their effectiveness in particular patient populations and sub-groups is emphasized by Attard and Rithalia\(^3\) and Flett et al\(^14\). Future trial designs should control for confounding factors and use validated outcome measures\(^15\).

Economic implications

No published studies examining the cost effectiveness of lycra splinting were identified. The NHSC review\(^1\) notes that a detailed cost effectiveness study is required to quantify any benefits arising from increased mobility, and reduced care needs compared to the costs of providing the suits and replacing them as the child grows. Substitution of existing splinting also needs to be taken into account. The price of the splints can vary greatly depending on their type, extent, the manufacturer and the fitting service provided, and as yet there is no published research comparing them. The NHSC review reports prices ranging from £55 to £1800\(^1\). The overall impact on NHS Scotland will depend on the number of children for which this treatment is deemed suitable\(^1\).

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This document is intended to direct NHSScotland planners to existing key evidence, which may be supportive to their decision making, rather than to provide a comprehensive overview of all the existing evidence. Evidence Notes are not designed to make specific recommendations to NHSScotland.
References


Further reading


Ongoing research in Scotland

NHS Greater Glasgow has been operating a dynamic lycra suit clinic for three years and is currently auditing the effectiveness of the provision of dynamic lycra suits to children with cerebral palsy. Research has also been undertaken at the clinic on the effectiveness of using lycra vests for children under two years of age with severe neurological signs. Further information on both projects is available from: Alison Morrison, Superintendent Physiotherapist. Tel: 0141 211 6150 or email: alison.morrison@yorkhill.scot.nhs.uk

Further information

- For further information about the Evidence Note process, see www.nhshealthquality.org or email evidencenotes@nhshealthquality.org.
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