THE EFFECTS OF LYCRA SLEEVES ON ACROMION-GREATER TUBEROSITY DISTANCE (AGT), MUSCLE ACTIVITY AND SCAPULA POSITION IN PEOPLE WITH POST-STROKE HEMIPLEGIA

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INTRODUCTION

- Glenohumeral subluxation (GHS) is reported in up to 81% of patients with stroke
- Our previous study found that a Lycra sleeve can reduce AGT distance (GHS) in people with chronic stroke (n=5).
- Our another recent study on healthy participants (n=31) found reduction in AGT, changes in scapula measurements and in muscle activity after the application of Lycra sleeve

PURPOSE

To investigate the changes in shoulder biomechanics following application of Lycra sleeves in people with post-stroke hemiplegia

PARTICIPANTS

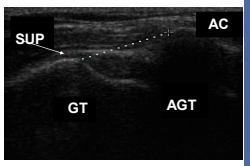
- People with stroke who gave informed consent were recruited through Bristol Area Stroke Foundation
- Measurements were taken before and immediately after application of the sleeve

Variables considered were

1) AGT distance (GHS) 2) Scapula position 3) Muscles in shoulder region (biceps, triceps, deltoid, and supraspinatus)

METHODS

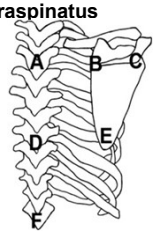
AGT distance



Ac –Acromion
GT – Greater Tuberosity
SUP–Supraspinatus

Scapula measurements

1) Inferior angle (E) to adjacent spinous process (D)
2) superior angle (B) to adjacent spinous process (A)



Muscle Activity – EMG

Lycra Sleeve in-situ

ANALYSIS

Only descriptive statistics of AGT distance scapula measurements and EMG activity are presented for individual patient with and without the Lycra sleeve. No statistical analysis were undertaken due to small sample size.

RESULTS

Six participants (M-2, F-4) with mean age 53±8 years were recruited.

Table 1: AGT distance without and with sleeves

Patient	AGT Distance (cm)	
	Without Sleeve	With Sleeve
1	2.30	2.00
2	2.00	1.90
3	2.10	1.90
4	3.00	2.90
5	1.70	1.60
6	2.2	2.10

Table 2: Scapula measurements without and with sleeves

Patient	Without Sleeve		With Sleeve	
	E-D	B-A	E-D	B-A
1	11	4.5	11	4.4
2	9.1	7.2	8	7.1
3	12.7	8.7	10.2	8
4	12.3	6.7	13	8.7
5	9.4	8.3	8.1	8
6	9	6	8.2	6

Table 3: EMG activity without and with sleeves

	Without Lycra				With Lycra			
	M1	M2	M3	M4	M1	M2	M3	M4
1	0.179	0.172	0.169	0.158	0.174	0.174	0.178	0.169
2	0.170	0.174	0.171	0.158	0.171	0.173	0.171	0.157
3	0.166	0.172	0.168	0.172	0.174	0.179	0.178	0.176
4	0.174	0.173	0.176	0.172	0.175	0.175	0.178	0.169
5	0.175	0.171	0.174	0.175	0.178	0.197	0.178	0.182
6	0.173	0.175	0.182	0.173	0.177	0.176	0.173	0.172

M1-Biceps M2-Triceps
M3-Deltoid M4-Supraspinatus

Values in red shows changes noted with sleeve on

CONCLUSIONS

- Lycra sleeve has potential to alter shoulder biomechanics in people with stroke.
- Changes noted in muscles and scapula position suggests the Lycra sleeve tends to provide better alignment to the shoulder joint.

Recommendations

- Further research is required to establish the effectiveness of the Lycra sleeve using a well-designed randomised controlled trial.

KEY MESSAGE

Application of Lycra sleeve

- **Reduces AGT distance**
- **Alters scapula position**
- **May change activity in muscles around the shoulder region**

Acknowledgements

1) This research was conducted as part of UG Physiotherapy programme at the University of West of England
2) Bristol Area Stroke Foundation for help with recruitment of participants
3) Volunteers for their participation
4) Jobskin Ltd UK, for supplying the Lycra sleeves
5) Smriti Kumar, Design

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