

National Institute for Health and Care Excellence

IP1741 Electrical stimulation to improve muscle strength in chronic respiratory conditions, chronic heart failure and chronic kidney disease

IPAC date: 19 March 2020

Com. no.	Consultee name and organisation	Sec. no.	Comments	Response
1	Consultee 1 Company Accelerated Care Plus	General	<p>We would like to add for consideration a RCT by Glaviano and colleagues that explores not only the effective of NMES on muscle mass/muscle bulking, but also on muscle activation, timing, and efficiency. In this study (citation: Glaviano NR, Marshall AN, Mangum LC, Hart JM, Jay Hertel J, Russell S, and Saliba S. Improvements in Lower-Extremity Function Following a Rehabilitation Program With Patterned Electrical Neuromuscular Stimulation in Females With Patellofemoral Pain: A Randomized Controlled Trial. Journal of Sport Rehabilitation, (Ahead of Print) https://doi.org/10.1123/jsr.2019-0278), several key points can be highlighted:</p> <ul style="list-style-type: none"> • Sixteen females with PFP received 4 weeks of Patterned Electrical Neuromuscle Stimulation to Hip abductors (GMed and VMO) and Hip adductors • Rehabilitation with NMES improved kinematics in both tasks (single leg squat and step-down task) versus sham group. • The majority of the EMG changes did occur over the muscle groups that the electrodes were placed over (Gluts, Adductors, and Hamstrings). • Step down test (SDT) kinematics they didn't increase trunk flexion (stayed more upright by 10%), significant decrease in hip adduction from 24 to 18 degrees, and both Glut max and Glut 	<p>Please respond to all comments</p> <p>Thank you for your comment.</p> <p>The identified study (Glaviano et al., 2019) did not meet the inclusion criteria for the population as musculoskeletal conditions were not included in the scope.</p> <p>The title has been changed to 'electrical stimulation to improve muscle strength in chronic respiratory conditions, chronic heart failure and chronic kidney disease' to clarify this.</p>

			<p>med decreased activation (amplitude) suggesting the muscles became more efficient to do the functional task</p> <ul style="list-style-type: none"> • Single leg squat (SLS) also showed decrease hip adduction kinematics, and adductor amplitude decrease • Decreased EMG activity suggests that rehabilitation with NMES may improve muscle function during functional tasks. 	
2	Consultee 2 British Thoracic Society		Thank you for inviting comments from the British Thoracic Society - we are pleased to see this guidance.	Thank you for your comment.
3	Consultee 2 British Thoracic Society	1.1	1.1 "For people who have an acute exacerbation of a non-neurological chronic disease and are unable to exercise, evidence of efficacy is adequate to support the use of this procedure provided that standard arrangements are in place for clinical governance, consent and audit." - could there be reference to fact that a) any (even if minimal) exercise activity alongside should be encouraged for its aerobic benefits and b) if NMES provides improvement ..then a formal exercise programme / rehabilitation should then be encouraged	<p>Thank you for your comment.</p> <p>A committee comment (Section 3.7) has been added to the guidance to make this point.</p>
4	Consultee 2 British Thoracic Society	3.5	3.5 - Agree re minimal evidence but for some patients with COPD, the acute exacerbation may be prolonged, impact ++ on function or be repetitive - patients who may particularly benefit possibly	<p>Thank you for your comment.</p> <p>The committee has considered this comment but decided not to change the guidance.</p>
5	Consultee 2 British Thoracic Society	Overview	Appendix on Pg 54 / Subtitled section of heart failure: seven references listed in the heart failure subgroup are studies of patients with COPD – a respiratory condition. These are Greening et al, Chaplin et al, Kucio et al, Lopez et al, Vivodtzev et al, Kaymz et al and Coquart et al. These should be removed and added to the COPD section.	<p>Thank you for your comment.</p> <p>These studies have been moved to the COPD section.</p>
6	Consultee 2 British Thoracic Society	Overview	2) Throughout the review the MCID for the 6MWT is referred to as 25m after Pulmonary rehabilitation. The recommendation for	Thank you for your comment.

			this is actually 30m as stated by ATS/ERS Statement/technical standards by Singh et al, 2014 and Holland et al, 2014.	'30 m' has been used in the overview.
7	Consultee 2 British Thoracic Society	Overview	3) There is inconsistency throughout with abbreviation for incremental shuttle walk test (ISWT) and endurance shuttle walk test (ESWT). The authors often use the term SWT which is confusing to the audience. I would urge the authors to consistently use either ISWT or ESWT and cease using SWT.	Thank you for your comment. The committee has noted that various versions of the test are used in the literature. However, it is NICE policy that the overview describes the specific test reported in the included studies.
8	Consultee 3 Bournemouth University	General	Working in an Orthopaedic Research Institute I am surprised that this document does not include OA and arthritis in general as a long term condition that could benefit from electrical stimulation. I presume that this will be the subject of further NICE guidelines. I think therefore if the title of this IPG could be clearer and explicitly exclude arthritis in the title.	Thank you for your comment. Arthritic conditions were not included in the scope of this guidance. The title has been changed to 'electrical stimulation to improve muscle strength in chronic respiratory conditions, chronic heart failure and chronic kidney disease' to make this clear.
9	Consultee 3 Bournemouth University	General	When I completed the initial Professional Expert Questionnaire I gave two references specifically on the effects of electrical stimulation of implanted pacemakers and defibrillators. One by ourselves and one by groups based in Vienna and Padua. Although not specifically on the conditions specified here they do give an overview of the problem that is more recent than the work of Cenik (2016) that is quoted here. As safety is such an important factor for this technique I feel that reference to them should be included in this document.	Thank you for your comment. Of the 2 identified articles, Badger et al. (2016) has been added to the appendix and Egger et al. (2019) was not considered for inclusion as it did not involve human subjects.

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