Ankle Foot Orthoses: Standardisation of terminology

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# A B S T R A C T

The term Ankle Foot Orthosis (AFO) has been standardised and defined by the International Organization for Standardisation which offers general terms for external orthoses, describing terms relating to external orthoses including the abbreviation AFO. These standards relate to functional deficiencies including a description of the person to be treated with an orthosis, clinical objectives of treatment, and functional requirements of the orthosis and offers categorisation and description of external orthoses and orthotic components using the aforementioned standards. However, it is important to point out that these definitions and standardisations only apply to the term “AFO”. Yet the terms used to describe the different types of AFOs have not been standardised and defined.

The term ankle foot orthosis (AFO) has been standardised and de- fined by the International Organization for Standardization (ISO) [1–3]. ISO 8549-1(1) offers general terms for external orthoses, ISO 8549-3(2) describes terms relating to external orthoses including the abbreviation AFO, ISO 8551(3) relates to functional deficiencies including a descrip- tion of the person to be treated with an orthosis, clinical objectives of treatment, and functional requirements of the orthosis. ISO 13404(4) offers categorisation and description of external orthoses and orthotic components using the aforementioned standards.

However, it is important to point out that these definitions and stan- dardisations only apply to the term “AFO”, there are a wide variety of AFOs, the function of which can differ due to relatively minor variations in design, these sub-categories of AFOs must also be clearly defined and standardised. The standards [1–4] indicate that AFOs can be classified according to function and type of fabrication but does not state what terminology should be used for such classifications. The issue is further complicated due to the protection of intellectual property or copyright issues. Thus, the definitions are not normally clear and easily accessible to clinicians.

In clinical terms, an AFO which blocks movement in all three planes

is often termed a solid AFO (SAFO) or a rigid AFO. These terms describe an AFO which has trim-lines anterior to the malleoli and either prevents deformation of the material during stance phase or allows it. To confuse matters further, the abbreviation SAFO is also used to describe a soft sil- icone ankle-foot orthosis.

AFOs can have hinges (HAFO or articulated AFOs (A-AFO)) or ter- minate just above the malleoli; supra-malleolar orthoses (SMO). An SMO with a neurological footplate is termed a dynamic AFO

(DAFO). AFOs with trim-lines posterior to the malleoli, to offer energy return, are also termed DAFOs or posterior leaf spring AFOs (PLS). AFOs can incorporate the knee joint; ground reaction force AFOs (GRAFOS or floor reaction AFOs (FRAFO)). None of these abbreviations have been standardised and defined yet are consistently used in research papers to describe an AFO intervention.

Clinicians and researchers are unequivocal that not all AFOs are the same, they don’t treat the same pathologies and have different effects

on biomechanical function. Yet the terms used to describe the *different types* of AFOs have not been standardised and defined, with descriptions and abbreviations differing between researchers and clinicians, resulting in poorly designed research [5], individual interpretation and a misun-

derstanding of research outcomes. Often leading to a generalisation on the effects of AFOs from studies that have not been clear on the design of the AFO used or the presenting pathology it was used for [5].

Although best practice guidelines have been published for describ- ing AFO interventions in research [6], which the authors support, they do not address the lack of standardisation of the terminology used to describe different types of AFOs. Ridgewell et al’ [6] uses terms such as “solid AFO” and abbreviations like GRAFO, SAFO, HAFO and PLS within the paper but does not state in its summary of best practice guidelines that such terminology requires standardisation. A recent re- view [5] on the details of AFOs used in research for children with cerebral palsy shows that unfortunately Ridegwell et al’ [6] guidelines are still not being adhered to, the paper also shows that researchers used 26 different names and abbreviations to describe the AFOs they

were studying, most likely in the belief that there is a common accep- tance/definition of what each name/type of AFO entails, which there is not.

Based on the authors experiences, organisations who provide train- ing on designing and/or prescribing orthoses, commonly use AFO abbre- viations which are not defined and standardised within their teaching material and within their examinations. This leads to confusion when the students are exposed to clinical practice. Hence, standardised termi- nology and definitions are critical. The International Society of Prosthet- ics and Orthotics (ISPO) has acknowledged that there is a need to stan- dardise AFO terminology and have been working on definitions for a number of years [7]. Other researchers have raised similar issues with a lack of standardisation for other aspects of orthotic intervention [8] and

have raised the question; *Is it time to expand on the current ISO definitions*

*for orthotic practice?*. We would echo this and welcome a clear, more standardised agreed terminology to describe the different types of AFOs. The aim being, to improve research design, allow meta-analyses, under- stand research outcomes through clear descriptions of interventions and ultimately to improve clinical practice.

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2