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Format: Abstract

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Trunk movements analysis: a systematic review from a clinical and methodological perspective.

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Abstract

AIM: This systematic literature **review** aims to check the current state of the art of non-gaitrelated optoelectronic **trunk movement analysis**; results have been analysed from a **clinical** and a **methodological perspective**.

METHODS: Extensive research was performed on all papers published until December 31st, 2015, dealing with **trunk movement analysis** assessed by optoelectronic systems, excluding those related to gait. The research was performed on the 14th of January 2016 on three databases: Scopus, Science Direct and Pubmed. A Reference search and expert consultation were also performed.

RESULTS: Out of a total number of 8431 papers, 45 were deemed relevant: they included 1334 participants, 57.9% healthy, with age range 8-85. Few studies considered the whole **trunk**, and none focused on each vertebra independently: the **trunk** was almost always divided into three segments. Thirteen studies included 20 or more markers. Most of the papers focused mainly on the biomechanics of various **movements**; the lumbar area and low back pain were the most studied region and pathology respectively.

CONCLUSIONS: This study has shown the relative scarcity of current literature focusing on **trunk** motion **analysis**. In **clinical** terms, results were sparse. The only quite well represented group of papers focused on the lumbar spine and pathologies, but the scarcity of individuals evaluated make the results questionable. The use of optoelectronic systems in the evaluation of spine **movement** is a growing research area. Nevertheless, no standard protocols have been developed so far. Future research is needed to define a precise protocol in terms of number and position of markers along the spine and **movements** and tasks to be evaluated.

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