

Supplementary Material

Wearable Devices in Scoliosis Treatment: A Scoping Review of Innovations and Challenges

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This supplementary file provides transparent and in-depth details of the search strategy used to identify and collate published evidence on wearable devices in scoliosis treatment. It reports, in full, the exact queries, databases, date ranges, and controlled vocabulary terms employed during the systematic literature search that underpins our review.

In Table S1, the PRISMA 2020 Checklist is presented, and in Table S2, the list studies and the reason for excluding them from the review were provided, following with the bibliography.

Search date: 29 March 2025

Pubmed:

("Wearable Electronic Devices"[Mesh] OR Wearable*[TIAB] OR (Electronic [TIAB] AND Skin[TIAB]) OR "Fitness Trackers"[Mesh] OR (Fitness[TIAB] AND Tracker*[TIAB]) OR (Activity[TIAB] AND Tracker*[TIAB]) OR "Hearing Aids"[Mesh] OR (Hearing [TIAB] AND Aid[TIAB]) OR (Hearing [TIAB] AND Aids[TIAB]) OR "Smart Glasses"[Mesh] OR (Glass*[TIAB] AND Smart[TIAB]) OR Smartglass*[TIAB] OR ("Head Up" [TIAB] AND Display*[TIAB]) OR (Head [TIAB] AND Mounted [TIAB] AND Display*[TIAB]) OR (Head [TIAB] AND Worn [TIAB] AND Display*[TIAB]) OR (Google[TIAB] AND Glass*[TIAB]) OR (Body-worn[TIAB] AND device*[TIAB]) OR (Portable [TIAB] AND smart[TIAB] AND device*[TIAB]) OR (On-body[TIAB] AND device*[TIAB]) OR (Body-mounted[TIAB] AND device*[TIAB]) OR (Smart [TIAB] AND body[TIAB] AND accessor*[TIAB]) OR (Smart[TIAB] AND clothing[TIAB])

OR

(body-borne[TIAB] AND computer*[TIAB])

OR

(head-mounted[TIAB] AND system[TIAB])

OR

(AR [TIAB] AND headset[TIAB])

OR (AR-HUD[TIAB])

OR (ARHMD[TIAB])

OR (augmented [TIAB] AND reality[TIAB] AND glass*[TIAB])

OR (HMD-AR[TIAB])

OR (OST-HMD[TIAB])

OR (see-through[TIAB] AND HMD[TIAB])

OR (head-mounted[TIAB] AND virtual[TIAB] AND reality[TIAB])

OR “OptiVu” [TIAB]

OR (virtual [TIAB] AND reality[TIAB])

OR (Augmented [TIAB] AND reality[TIAB])

OR (VR [TIAB] AND (glass* [TIAB] OR “head set” [TIAB] OR headset[TIAB] OR helmet [TIAB] OR HMD[TIAB]))

OR VR-HMD[TIAB]

OR VRHMD[TIAB]

OR (health[TIAB] AND watch[TIAB])

OR (smart[TIAB] AND watch[TIAB])

OR

(Electronic[TIAB] AND monitoring[TIAB])

OR

Sensor[TIAB]

OR

Sensors[TIAB]

OR

ScoliBrace* [TIAB]

OR

SpineCor[TIAB]

OR

(Smart[TIAB] AND Brace*[TIAB])

OR

(Smart[TIAB] AND Implant*[TIAB])

OR

(Posture[TIAB] AND Monitoring[TIAB])

OR

(UPRIGHT [TIAB] AND GO[TIAB])

OR

(Lumo [TIAB] AND Lift[TIAB])

OR

(Posture [TIAB] AND Tracker*[TIAB])

OR

EMS [TIAB]

OR

(Electrical [TIAB] AND Muscle[TIAB] AND Stimulation[TIAB])

OR

(Neurotech [TIAB] AND ActiGait[TIAB])

OR

(NeuroMD[TIAB] AND Corrective [TIAB] AND Device*[TIAB])

OR

(Smart [TIAB] AND Shirt[TIAB])

OR

VR-Based [TIAB]

OR

(VR[TIAB] AND Therapy[TIAB])

OR

(Posture[TIAB] AND Reminder [TIAB])

OR

EMG [TIAB]

OR

(Noraxon[TIAB] AND MyoTrace[TIAB])

OR

VirtuReal [TIAB]

OR

(Kinect-based[TIAB] AND Posture[TIAB] AND Analysis[TIAB])

OR

(Functional [TIAB] AND Electrical[TIAB] AND Stimulation [TIAB])

OR

FES[TIAB]

OR

(Neurotech [TIAB] AND Functional [TIAB] AND Stimulation[TIAB]))

AND

("Scoliosis"[Mesh] OR Scolioses[TIAB]

OR (Spinal[TIAB] AND curvature[TIAB]) OR (Lateral [TIAB] AND spinal[TIAB] AND deviation[TIAB]) OR (Vertebral [TIAB] AND curvature[TIAB] AND disorder[TIAB]) OR

(Spinal[TIAB] AND deformity[TIAB]) OR (Curved[TIAB] AND spine [TIAB] AND condition[TIAB]))

RESULTS: 374

Web of Science:

S=((Wearable* OR (Electronic AND Skin) OR (Fitness AND Tracker*) OR (Activity AND Tracker*) OR (Hearing AND Aid) OR (Hearing AND Aids) OR (Glass* AND Smart) OR Smartglass* OR ("Head Up" AND Display*) OR (Head AND Mounted AND Display*) OR

(Head AND Worn AND Display*) OR (Google AND Glass*) OR (Body-worn AND device*) OR (Portable AND smart AND device*) OR (On-body AND device*) OR (Body-mounted AND device*) OR (Smart AND body AND accessor*) OR (Smart AND clothing) OR (body-borne AND computer*) OR (head-mounted AND system) OR (AR AND headset) OR (AR-HUD) OR (ARHMD) OR (augmented AND reality AND glass*) OR (HMD-AR) OR (OST-HMD) OR (see-through AND HMD) OR (head-mounted AND virtual AND reality) OR "OptiVu" OR (virtual AND reality) OR (Augmented AND reality) OR (VR AND (glass* OR "head set" OR headset OR helmet OR HMD)) OR VR-HMD OR VRHMD OR (health AND watch) OR (smart AND watch) OR (Electronic AND monitoring) OR Sensor OR Sensors OR ScolioBrace* OR SpineCor OR (Smart AND Brace*) OR (Smart AND Implant*) OR (Posture AND Monitoring) OR (UPRIGHT AND GO) OR (Lumo AND Lift) OR (Posture AND Tracker*) OR EMS OR (Electrical AND Muscle AND Stimulation) OR (Neurotech AND ActiGait) OR (NeuroMD AND Corrective AND Device*) OR (Smart AND Shirt) OR VR-Based OR (VR AND Therapy) OR (Posture AND Reminder) OR EMG OR (Noraxon AND MyoTrace) OR VirtuReal OR (Kinect-based AND Posture AND Analysis) OR (Functional AND Electrical AND Stimulation) OR FES OR (Neurotech AND Functional AND Stimulation))

AND

(Scolioses OR (Spinal AND curvature) OR (Lateral AND spinal AND deviation) OR (Vertebral AND curvature AND disorder) OR (Spinal AND deformity) OR (Curved AND spine AND condition)))

Results: 1013

SCOPUS:

TITLE-ABS-KEY((Wearable* OR (Electronic AND Skin) OR (Fitness AND Tracker*) OR (Activity AND Tracker*) OR (Hearing AND Aid) OR (Hearing AND Aids) OR (Glass* AND Smart) OR Smartglass* OR ("Head Up" AND Display*) OR (Head AND Mounted AND Display*) OR (Head AND Worn AND Display*) OR (Google AND Glass*) OR (Body-worn AND device*) OR (Portable AND smart AND device*) OR (On-body AND device*) OR (Body-mounted AND device*) OR (Smart AND body AND accessor*) OR (Smart AND clothing) OR (body-borne AND computer*) OR (head-mounted AND system) OR (AR AND headset) OR (AR-HUD) OR (ARHMD) OR (augmented AND reality AND glass*) OR (HMD-AR) OR (OST-HMD) OR (see-through AND HMD) OR (head-mounted AND virtual AND reality) OR "OptiVu" OR (virtual AND reality) OR (Augmented AND reality) OR (VR AND (glass* OR "head set" OR headset OR helmet OR HMD)) OR VR-HMD OR VRHMD

OR (health AND watch) OR (smart AND watch) OR (Electronic AND monitoring) OR Sensor
 OR Sensors OR Scolibrace* OR SpineCor OR (Smart AND Brace*) OR (Smart AND
 Implant*) OR (Posture AND Monitoring) OR (UPRIGHT AND GO) OR (Lumo AND Lift)
 OR (Posture AND Tracker*) OR EMS OR (Electrical AND Muscle AND Stimulation) OR
 (Neurotech AND ActiGait) OR (NeuroMD AND Corrective AND Device*) OR (Smart AND
 Shirt) OR VR-Based OR (VR AND Therapy) OR (Posture AND Reminder) OR EMG OR
 (Noraxon AND MyoTrace) OR VirtuReal OR (Kinect-based AND Posture AND Analysis) OR
 (Functional AND Electrical AND Stimulation) OR FES OR (Neurotech AND Functional AND
 Stimulation))

AND

(Scolioses OR (Spinal AND curvature) OR (Lateral AND spinal AND deviation) OR
 (Vertebral AND curvature AND disorder) OR (Spinal AND deformity) OR (Curved AND spine
 AND condition)))

Results: 918

EMBASE:

('wearable computer'/exp OR 'activity tracker'/exp OR 'hearing aid'/exp OR 'smart glasses'/exp
 OR Wearable*:ti,ab,kw OR (Electronic:ti,ab,kw AND Skin:ti,ab,kw) OR (Fitness:ti,ab,kw
 AND Tracker*:ti,ab,kw) OR (Activity:ti,ab,kw AND Tracker*:ti,ab,kw) OR (
 Hearing:ti,ab,kw AND Aid:ti,ab,kw) OR (Hearing:ti,ab,kw AND Aids:ti,ab,kw) OR
 (Glass*:ti,ab,kw AND Smart:ti,ab,kw) OR Smartglass*:ti,ab,kw OR (“Head
 Up”:ti,ab,kw AND Display*:ti,ab,kw) OR (Head:ti,ab,kw AND Mounted:ti,ab,kw AND
 Display*:ti,ab,kw) OR (Head:ti,ab,kw AND Worn:ti,ab,kw AND Display*:ti,ab,kw)
 OR (Google:ti,ab,kw AND Glass*:ti,ab,kw) OR (Body-worn:ti,ab,kw AND
 device*:ti,ab,kw) OR (Portable:ti,ab,kw AND smart:ti,ab,kw AND device*:ti,ab,kw)
 OR (On-body:ti,ab,kw AND device*:ti,ab,kw) OR (Body-mounted:ti,ab,kw AND
 device*:ti,ab,kw) OR (Smart:ti,ab,kw AND body:ti,ab,kw AND accessor*:ti,ab,kw) OR
 (Smart:ti,ab,kw AND clothing:ti,ab,kw)

OR

(body-borne:ti,ab,kw AND computer*:ti,ab,kw)

OR

(head-mounted:ti,ab,kw AND system:ti,ab,kw)

OR

(AR:ti,ab,kw AND headset:ti,ab,kw)

OR (AR-HUD:ti,ab,kw)

OR (ARHMD:ti,ab,kw)

OR (augmented:ti,ab,kw AND reality:ti,ab,kw AND glass*:ti,ab,kw)

OR (HMD-AR:ti,ab,kw)

OR (OST-HMD:ti,ab,kw)

OR (see-through:ti,ab,kw AND HMD:ti,ab,kw)

OR (head-mounted:ti,ab,kw AND virtual:ti,ab,kw AND reality:ti,ab,kw)

OR “OptiVu”:ti,ab,kw

OR (virtual:ti,ab,kw AND reality:ti,ab,kw)

OR (Augmented:ti,ab,kw AND reality:ti,ab,kw)

OR (VR:ti,ab,kw AND (glass*:ti,ab,kw OR “head set”:ti,ab,kw OR headset:ti,ab,kw OR helmet:ti,ab,kw OR HMD:ti,ab,kw))

OR VR-HMD:ti,ab,kw

OR VRHMD:ti,ab,kw

OR (health:ti,ab,kw AND watch:ti,ab,kw)

OR (smart:ti,ab,kw AND watch:ti,ab,kw)

OR

(Electronic:ti,ab,kw AND monitoring:ti,ab,kw)

OR

Sensor:ti,ab,kw

OR

Sensors:ti,ab,kw

OR

ScoliBrace*:ti,ab,kw

OR

SpineCor:ti,ab,kw

OR

(Smart:ti,ab,kw AND Brace*:ti,ab,kw)

OR

(Smart:ti,ab,kw AND Implant*:ti,ab,kw)

OR

(Posture:ti,ab,kw AND Monitoring:ti,ab,kw)

OR

(UPRIGHT:ti,ab,kw AND GO:ti,ab,kw)

OR

(Lumo:ti,ab,kw AND Lift:ti,ab,kw)

OR

(Posture:ti,ab,kw AND Tracker*:ti,ab,kw)

OR

EMS:ti,ab,kw

OR

(Electrical:ti,ab,kw AND Muscle:ti,ab,kw AND Stimulation:ti,ab,kw)

OR

(Neurotech:ti,ab,kw AND ActiGait:ti,ab,kw)

OR

(NeuroMD:ti,ab,kw AND Corrective:ti,ab,kw AND Device*:ti,ab,kw)

OR

(Smart:ti,ab,kw AND Shirt:ti,ab,kw)

OR

VR-Based:ti,ab,kw

OR

(VR:ti,ab,kw AND Therapy:ti,ab,kw)

OR

(Posture:ti,ab,kw AND Reminder:ti,ab,kw)

OR

EMG:ti,ab,kw

OR

(Noraxon:ti,ab,kw AND MyoTrace:ti,ab,kw)

OR

VirtuReal:ti,ab,kw

OR

(Kinect-based:ti,ab,kw AND Posture:ti,ab,kw AND Analysis:ti,ab,kw)

OR

(Functional:ti,ab,kw AND Electrical:ti,ab,kw AND Stimulation:ti,ab,kw)

OR

FES:ti,ab,kw

OR

(Neurotech:ti,ab,kw AND Functional:ti,ab,kw AND Stimulation:ti,ab,kw))

AND

('scoliosis'/exp OR Scolioses:ti,ab,kw

OR (Spinal:ti,ab,kw AND curvature:ti,ab,kw) OR (Lateral:ti,ab,kw AND spinal:ti,ab,kw AND deviation:ti,ab,kw) OR (Vertebral:ti,ab,kw AND curvature:ti,ab,kw AND disorder:ti,ab,kw) OR

(Spinal:ti,ab,kw AND deformity:ti,ab,kw) OR (Curved:ti,ab,kw AND spine:ti,ab,kw AND condition:ti,ab,kw))

Results: 510

Table S1: PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	This is a scoping review paper not systematic review.
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 1.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 2, paragraph 3, line 64- page 2, paragraph 5, line 80, Page 2, paragraph 6, line 89.
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	page 3, paragraph 2, line 98.
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	page 3, paragraph 6, line 124. page 4, paragraph 2, line 144.
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	page 3, paragraph 4, line 111.
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supplementary Material 1 file
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	page 3, paragraph 7, line 129.
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	page 3, paragraph 7, line 129.
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 5, paragraph 1, line 161.
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Tables 1-4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Not applicable for Scoping review, (mentioned at page 3, paragraph 7, line 129).
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Not applicable for Scoping review (As this review is a scoping review without quantitative synthesis, no statistical effect measures (e.g., risk ratios or mean differences) were applied.)
Synthesis	13a	Describe the processes used to decide which studies were eligible for	page 3, paragraph 5, line

Section and Topic	Item #	Checklist item	Location where item is reported
methods		each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	119- page 4, paragraph 3, line 157- page 5, paragraph 1, line 161
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	5, paragraph 1, line 167.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	page 5, paragraph 1, line 161-fig 2-fig 3-fig 4
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 3, paragraph 3, line 106. (meta-analysis was not performed)
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Not applicable (As this study is a scoping review with no quantitative synthesis or pooled statistical analysis, no subgroup analysis or meta-regression was conducted to explore heterogeneity.)
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Not applicable (As this study is a scoping review with qualitative thematic synthesis and no quantitative pooling of data, sensitivity analyses were not conducted.)
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Not applicable (As this is a scoping review without quantitative synthesis or meta-analysis, no methods were applied to assess risk of bias due to missing results or reporting bias.)
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Not applicable. (This review is a scoping review and did not assess the certainty or confidence in the body of evidence for specific outcomes.)
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	page 4, paragraph 2, line 144- Figure 1.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	page 4, paragraph 2, line 151 (Table S1 in the Supplementary Material includes a list of studies that initially appeared to meet inclusion criteria but were excluded during full-text screening, with reasons for exclusion

Section and Topic	Item #	Checklist item	Location where item is reported
			provided.)
Study characteristics	17	Cite each included study and present its characteristics.	Each included study is cited, and its characteristics are presented in detail throughout Tables 1–4
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Page 3, paragraph 7, line 129. (This review is a scoping review and did not include formal risk of bias assessments for each study, as the aim was to provide an overview of the literature rather than evaluate study quality or synthesize effect sizes.)
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Not applicable. (As this review is a scoping review without quantitative comparison between intervention groups, no summary statistics, effect estimates, or confidence intervals were presented.)
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	The characteristics of studies included in each conceptual grouping were summarized narratively and tabulated in Tables 1–4 . However, risk of bias was not assessed, as this is a scoping review and the primary objective of this study was to map the breadth of existing evidence, not to evaluate methodological quality or synthesize effect estimates.
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Not applicable. (As this study is a scoping review and did not include any statistical synthesis or meta-analysis, no effect estimates, confidence intervals, or heterogeneity measures were reported.)
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Not applicable. (As this study is a scoping review without statistical synthesis, no investigations of heterogeneity (e.g., subgroup analysis or meta-regression) were conducted.)

Section and Topic	Item #	Checklist item	Location where item is reported
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Not applicable. (This study is a scoping review without quantitative synthesis; therefore, sensitivity analyses were not conducted.)
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Page 3, paragraph 7, line 129. (As this study is a scoping review without statistical synthesis or effect size estimation, risk of bias due to missing results (e.g., publication bias) was not assessed.)
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Not applicable. (As this study is a scoping review, it did not assess the certainty or confidence in the body of evidence for individual outcomes.)
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 21, paragraph 1, line 387- Page 21, paragraph 2, line 395- Page 21, paragraph 3, line 402- Page 21, paragraph 4, line 416.
	23b	Discuss any limitations of the evidence included in the review.	Page 22, paragraph 2, line 440- Page 22, paragraph 3, line 450- Page 22, paragraph 4, line 456- Page 22, paragraph 5, line 465.
	23c	Discuss any limitations of the review processes used.	page 3, paragraph 7, line 129- Page 22, paragraph 5, line 469.
	23d	Discuss implications of the results for practice, policy, and future research.	Page 23, paragraph 2, line 491.
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	This scoping review was not registered in any protocol registry.
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	No protocol was prepared for this scoping review.
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable. (This review was not registered, and no protocol was prepared; therefore, no amendments were made.)
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 23, paragraph 4, line 519 (This project was supported by the Natural Sciences and Engineering Research Council of Canada (NSERC))

Section and Topic	Item #	Checklist item	Location where item is reported
			Discovery Grant [grant number 401610] and the Alberta Innovates Postdoctoral Fellowship program. The funders had no role in the design, analysis, interpretation, or writing of the review.)
Competing interests	26	Declare any competing interests of review authors.	Page 24, paragraph 5, line 540.
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	The materials used in this review, including data extraction forms and synthesized datasets, are not publicly available.

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. This work is licensed under CC BY 4.0. To view a copy of this license, visit <https://creativecommons.org/licenses/by/4.0/>

Table S2: Studies Excluded After Full-Text Screening with Justifications

Citation	Study Title	Reason for Exclusion
Hannink (2020) [1]	The validity of the kinect sensor for the measurement of sagittal spine curvature against the gold standard lateral spinal radiograph	Related to wearable devices in diagnosis of scoliosis
Hannink et al. (2020) [2]	Measurement of sagittal spine curvature: comparing the Kinect depth camera to the flexicurve and digital inclinometers in a clinical population	
Kokabu (2021) [3]	An algorithm for using deep learning convolutional neural networks with three dimensional depth sensor imaging in scoliosis detection	
Kurzeja (2021) [4]	Selected aspects of using surface topography and scoliometer in screening for scoliotic postural asymmetry in girls	
Li (2021) [5]	Design, reliability, and validity of a portable electronic device based on ergonomics for early screening of adolescent scoliosis	
Shchurova et al. (2021) [6]	Analysis of the degree of involvement of the lower limb muscles in the pathological process in adolescents with idiopathic scoliosis	
Tajdari et al. (2021) [7]	Artificial intelligence data-driven 3D model for AIS	
Tang et al. (2021) [8]	Upper Body Posture Recognition Using Inertial Sensors and Recurrent Neural Networks	
Xu et al. (2021) [9]	Machine-learning-based children's pathological gait classification with low-cost gait-recognition system	
Hong (2022) [10]	Measurement of covered curvature based on a tape of integrated accelerometers	
Huang (2022) [11]	Anatomical prior based vertebra modelling for reappearance of human spines	
Sabri (2022) [12]	Integrated Evolving Spiking Neural Network and Feature Extraction Methods for Scoliosis Classification	
Sabri (2022) [13]	The hybrid feature extraction method for classification of adolescence idiopathic scoliosis using Evolving Spiking Neural Network	
Sikidar (2022) [14]	Classification of mild and severe adolescent idiopathic scoliosis (AIS) from healthy subjects via a supervised learning model based on electromyogram and ground reaction force data during gait	
Shepel and Horoshko (2022) [15]	EFFECTIVENESS OF THE APPLICATION OF KINESIOTAPING IN THE RECOVERY TREATMENT OF IDIOPATHIC SCOLIOSIS, DEGREE 1-2	
Simoneau et al. (2022) [16]	Adolescents with idiopathic scoliosis show decreased intermuscular coherence in lumbar paraspinal muscles: A new pathophysiological perspective	
Villi (2022) [17]	Spine pathologies detections: users' requirements, technological development and first results	

Fan (2023) [18]	Electromyographic Discrepancy in Paravertebral Muscle Activity Predicts Early Curve Progression of Untreated Adolescent Idiopathic Scoliosis	
Tileston et al. (2023) [19]	P96. Postoperative mobility following posterior spinal fusion for adolescent idiopathic scoliosis	
Vutan et al. (2023) [20]	The Use of Accelerometers to Track Changes in Cobb Angles During Scoliosis Rehabilitation Exercises	
Ishikawa (2023) [21]	Prediction of Cobb Angle Using Deep Learning Algorithm with Three-Dimensional Depth Sensor Considering the Influence of Garment in Idiopathic Scoliosis	
Constantinescu et al. (2024) [22]	Scoliotic postural alignment in prepubertal children: somatoscopic analysis of anatomical landmarks and development of a working model to limit spinal changes	
Goto et al. (2024) [23]	Clinical Significance of Pose Estimation Methods Compared with Radiographic Parameters in Adolescent Patients with Idiopathic Scoliosis	
Fan (2024) [24]	An All-in-One Array of Pressure Sensors and sEMG Electrodes for Scoliosis Monitoring	
Shangyu (2024) [25]	Combining artificial intelligence for diagnosing adolescent idiopathic scoliosis	
Keil et al. (2024) [26]	Improving Therapy for Children with Scoliosis through Reducing Ionizing Radiation by Using Alternative Imaging Methods-A Study Protocol	
Kim et al. (2024) [27]	Explainable Deep-Learning-Based Gait Analysis of Hip-Knee Cyclogram for the Prediction of Adolescent Idiopathic Scoliosis Progression	
Mohamed et al. (2024) [28]	Effect of adding Schroth physiotherapeutic scoliosis specific exercises to standard care in adolescents with idiopathic scoliosis on posture assessed using surface topography: A secondary analysis of a Randomized Controlled Trial (RCT)	
Vongsirinavarat et al. (2024) [29]	Electromyography of paraspinal muscles during self-corrective positions in adolescent idiopathic scoliosis	
Wang et al. (2024) [30]	Advanced Camera-Based Scoliosis Screening via Deep Learning Detection and Fusion of Trunk, Limb, and Skeleton Features	
Yang et al. (2025) [31]	An automated adolescent idiopathic scoliosis assessment and monitoring model based on back surface	
Mohamed (2025) [32]	Three-dimensional markerless surface topography approach with convolutional neural networks for adolescent idiopathic scoliosis screening	
Rauber et al. (2024) [33]	Predicted vs. measured paraspinal muscle activity in adolescent idiopathic scoliosis patients: EMG validation of optimization-based musculoskeletal simulations	Related to wearable devices in scoliosis surgery
Ahmed (2020) [34]	An Exoskeleton Based Robotic Device for Providing Rehabilitative Therapies to Human Forearm and Wrist Joints (UWM-FWRR)	
Barsotti (2020) [35]	Diagnostic accuracy of perioperative electromyography in the positioning of pedicle screws in adolescent idiopathic scoliosis treatment: a cross-sectional diagnostic study	

Carl (2020) [36]	Spine Surgery Supported by Augmented Reality
McClendon et al. (2020) [37]	Use of Pheno Room, Augmented Reality, and 3-Rod Technique for 3-Dimensional Correction of Adolescent Idiopathic Scoliosis
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