

STARS Critically Appraised Topic (CAT) Group: Effectiveness and cost-effectiveness of non-slip socks in inpatient rehabilitation.

Specific Question:

In adults hospitalised for inpatient rehabilitation, are non-slip socks more effective and cost-effective for preventing falls, improving function (e.g. mobilising), and confidence compared to wearing usual footwear or no footwear (e.g. barefoot or compression stocking).

Clinical bottom line

There is insufficient evidence (currently there are no high-quality, controlled studies) to support the routine use of non-slip socks for adults in rehabilitation hospital settings to prevent falls.

Why is this important?

At the Surgical Treatment and Rehabilitation Service (STARS), non-slip socks are not routinely provided and prescription of non-slip socks is variable across wards. There is a perception of nursing staff that non-slip socks increase patient's confidence and safety, particularly where footwear isn't or cannot be worn and for patient's mobilising in compression stockings. STARS staff want to understand the evidence about the benefit of non-slip socks to inform practice and policy about purchase of and prescription of non-slip socks to rehabilitation inpatients.

Inclusion Criteria

See PICO table

Search date

05/12/2024

Type of Study

Add text

PICOT

	Description	Search terms
Population and Setting	Hospitalised adults, Rehabilitation.	See below search strategy
Intervention or Exposure (ie what is being tested)	Wearing non-slip socks	
Comparison, if any	Wearing usual footwear/shoes or no shoes	
Outcomes of interest	Falls/falls prevention, confidence to mobilise, physical activity, cost effectiveness, complications (ie. foot infections).	
Types of studies	All studies published in English considered for inclusion	

Databases Searched

PubMed, CINAHL Complete (EBSCOhost), Embase (Elsevier), Cochrane Library – Reviews, CENTRAL (Wiley)

Date of search

05/12/2024

Search Strategies (including subject headings)

PubMed 31 results

Limited to English and undefined language, publication years 2004-2024

((("Accidental Falls"[mh] OR "Self Concept"[mh] OR "Friction"[mh] OR "Costs and Cost Analysis"[mh]) AND ("Protective Clothing"[mh:noexp] OR "Clothing"[mh:noexp]) AND Foot[mh:noexp]) OR "slipper socks"[tiab] OR "slipper sock"[tiab] OR ((("non slip"[tiab] OR "non-slip"[tiab] OR nonslip[tiab] OR antislip[tiab] OR "anti slip"[tiab] OR grip[tiab] OR "slip resistant"[tiab] OR "slip resistance"[tiab] OR antiskid[tiab] OR nonskid[tiab] OR barefoot[ti] OR traction[tiab]) AND (((("Protective Clothing"[mh:noexp] OR "Clothing"[mh:noexp]) AND "Foot"[mh:noexp]) OR sock[tiab] OR socks[tiab])) AND 2004:2024[dp] AND (eng[la] OR und[la]))

CINAHL Complete (EBSCOhost) 35 results

Limited to English language, publication years 2004-2024

((((MH "Accidental Falls") OR (MH "Self Concept+") OR (MH "Friction") OR (MH "Costs and Cost Analysis+")) AND ((MH "Clothing") OR (MH "Protective Clothing"))) AND (MH "Foot")) OR (((TI "slipper socks" OR AB "slipper socks") OR (TI "slipper sock" OR AB "slipper sock") OR (TI "non slip" OR AB "non slip") OR (TI non-slip OR AB non-slip) OR (TI nonslip OR AB nonslip) OR (TI antislip OR AB antislip) OR (TI "anti slip" OR AB "anti slip") OR (TI grip OR AB grip) OR (TI "slip resistant" OR AB "slip resistant") OR (TI "slip resistance" OR AB "slip resistance") OR (TI antiskid OR AB antiskid) OR (TI nonskid OR AB nonskid) OR (TI barefoot) OR (TI traction OR AB traction)) AND (((MH "Protective Clothing") OR (MH "Clothing") AND (MH "Foot")) OR (TI sock OR AB sock) OR (TI socks OR AB socks)))

Embase (Elsevier) 34 results

Limited to English language, publication years: 2004-2024, relevant publication types (excluding conference abstracts)

((('falling'/exp OR 'self concept'/exp OR 'friction'/exp OR 'cost'/exp) AND ('protective clothing'/de OR 'clothing'/de) AND 'foot'/de) OR 'slipper socks':ti,ab,kw OR 'slipper sock':ti,ab,kw OR (('non slip':ti,ab,kw OR 'non-slip':ti,ab,kw OR 'nonslip':ti,ab,kw OR 'antislip':ti,ab,kw OR 'anti slip':ti,ab,kw OR 'grip':ti,ab,kw OR 'slip resistant':ti,ab,kw OR 'slip resistance':ti,ab,kw OR 'antiskid':ti,ab,kw OR 'nonskid':ti,ab,kw OR 'barefoot':ti OR 'traction':ti,ab,kw) AND (('protective clothing'/de OR 'clothing'/de) AND 'foot'/de OR 'sock':ti,ab,kw OR 'socks':ti,ab,kw))) AND [english]/lim AND [2004-2024]/py AND ([article]/lim OR [article in press]/lim OR [review]/lim)

Cochrane Library (Wiley) 12 results

Advanced Search – Search Manager

Limited to publication date January 2024 to present

Search

Search manager

Medical terms (MeSH)

PICO search

Save this search

View/Share saved searches

Search help

View fewer lines

Print search history

+			
-	+	#1	[mh "accidental falls"] OR [mh "Self Concept"] OR [mh friction] OR [mh "Costs and Cost Analysis"]
			Limits 28620
-	+	#2	[mh ^"protective clothing"] OR [mh ^clothing]
			Limits 774
-	+	#3	[mh ^foot]
			Limits 1304
-	+	#4	{AND #1-#3}
			Limits 1
-	+	#5	"slipper socks":ti,ab OR "slipper sock":ti,ab
			Limits 0
-	+	#6	"non slip":ti,ab OR non-slip:ti,ab OR nonslip:ti,ab OR antislip:ti,ab OR "anti slip":ti,ab OR grip:ti,ab OR "slip resistant":ti,ab OR "slip resistance":ti,ab OR antiskid:ti,ab OR nonskid:ti,ab OR barefoot:ti OR traction:ti,ab
			Limits 10704
-	+	#7	[mh ^"protective clothing"] OR [mh ^clothing]
			Limits 774
-	+	#8	[mh ^foot]
			Limits 1304
-	+	#9	{AND #7-#8}
			Limits 12
-	+	#10	sock:ti,ab OR socks:ti,ab
			Limits 749
-	+	#11	#5 OR (#6 AND (#9 OR #10))
			Limits 13
-	+	#12	#4 OR #11
			Limits 12

with Cochrane Library publication date from Jan 2004 to present, in Cochrane Reviews and Trials

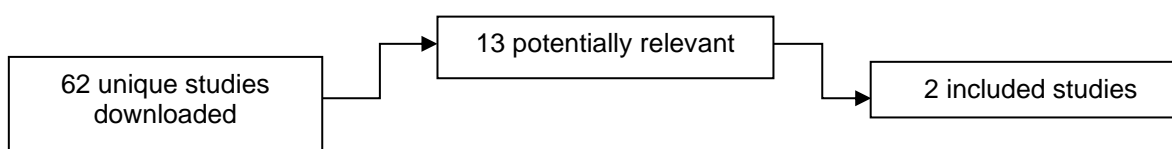
with Cochrane Library publication date from Jan 2004 to present, in Cochrane Reviews and Trials

ID	Search	Hits
#1	[mh "accidental falls"] OR [mh "Self Concept"] OR [mh friction] OR [mh "Costs and Cost Analysis"]	28620
#2	[mh ^"protective clothing"] OR [mh ^clothing]	774
#3	[mh ^foot]	1304
#4	{AND #1-#3}	1
#5	"slipper socks":ti,ab OR "slipper sock":ti,ab	0
#6	"non slip":ti,ab OR non-slip:ti,ab OR nonslip:ti,ab OR antislip:ti,ab OR "anti slip":ti,ab OR grip:ti,ab OR "slip resistant":ti,ab OR "slip resistance":ti,ab OR antiskid:ti,ab OR nonskid:ti,ab OR barefoot:ti OR traction:ti,ab	10704
#7	[mh ^"protective clothing"] OR [mh ^clothing]	774
#8	[mh ^foot]	1304
#9	{AND #7-#8}	12
#10	sock:ti,ab OR socks:ti,ab	749
#11	#5 OR (#6 AND (#9 OR #10))	13
#12	#4 OR #11 with Cochrane Library publication date from Jan 2004 to present, in Cochrane Reviews, Trials	12

Search process

Search was developed in PubMed based on a small key paper set based on "non-slip socks" related terms and translated to other databases using the Embase Query Translator and the SR-Accelerator (<https://sr-accelerator.com/#/>). Search results were deduplicated with SR-Accelerator's Deduplicator (<https://sr-accelerator.com/#/deduplicator>) and 62 results were then imported to the Screenatron (<https://sr-accelerator.com/#/screenatron>) to identify potentially relevant results. Thirteen (13) potentially relevant studies were imported to an EndNote library to format it to an annotated style. The formatted references and their abstracts were copied to a Microsoft Word document for CAT Group to select studies for critical appraisal. A copy of the EndNote library including all database results, deduplicated results and potential relevant results was supplied as well.

Results





49 excluded studies

First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
Hartung and Lalonde (2017). Narrative literature review	Review included studies focussed on hospitalised older adults	Non-slip socks compared to other footwear to prevent falls	The review included 3 non-controlled studies with inconsistent findings about the change in falls in response to introduction of non-slip socks. Due to lack of controlled studies conclusions cannot be drawn from this review about the effect of non-slip socks on falls.	<p>Whilst the review was relevant to the PICO question, there were a number of methodological limitations including:</p> <ul style="list-style-type: none"> - Sample sizes of all 3 studies not reported. - No formal assessment of the quality (risk of bias) of the studies - Searched 5 databases including studies in English only (no other sources search ie. reference lists of included papers) - It is unknown whether the selection and review of included literature was conducted independently by 2 researchers - non-recency of literature searches
Jazayeri et al (2021). Rapid review	Review included studies focussed on hospital settings (population not specified)	Non-slip socks as a single or part of a multi-factorial intervention	The review included 9 non-controlled studies, using non-slip socks as an intervention in hospitals, with inconsistency across studies in changes in falls in response to the introduction of non-slip socks. Therefore, due to lack of controlled studies conclusions cannot be drawn from this review about the effect of non-slip socks on falls.	<ul style="list-style-type: none"> - Not specific to all aspects of the PICO question (adults in rehabilitation settings) - No sample sizes or demographic information about the samples were provided for each of the included studies, so unable to draw conclusions about the applicability of the findings to the inpatient rehabilitation population - non-recency of literature searches - lacked inclusion of a detailed search strategy

Summary

Two relevant literature reviews were identified and critically evaluated to answer the PICO question.

The review by Hartung and Lalonde (2017) included 3 non-controlled studies of relevance to the PICO (2 of which included non-slip socks as one aspect of multifaceted interventions). The 3 studies were a quality improvement non-

experimental study, a quasi-experimental study including non-slip socks as one of 14 falls prevention interventions, and a quality improvement retrospective study including non-slip socks along with patient education and nursing assessments as part of a falls prevention program. The review found differing results across the studies with two finding a slight reduction in some types of falls post implementation of slip socks with one study showing a significant increase in falls in the unit in which non-slip socks were introduced. Due to lack of controlled studies including control groups (ie. randomised controlled trials), conclusions cannot be drawn from this review about the beneficial effect of non-slip socks on falls.

Jazayeri et al (2021) included 9 non-controlled studies of relevance to the PICO (8 pre-post studies with no control group and one quasi-experimental study design) with one of these studies evaluating non-slip socks as the only intervention, which found no statistically significant benefit of non-slip socks. The remaining 8 studies were multi-factorial including non-slip socks as one aspect of the intervention. All included studies were evaluated for risk of bias and 5 were found to have a high risk of bias and 3 a moderate risk of bias. There were no RCTs identified in this more recent review, therefore due to lack of controlled studies conclusions cannot be drawn from this review about the beneficial effect of non-slip socks on falls.

Studies included in both of these literature reviews were heterogeneous thus both reviews describe and summarise the findings of the included studies and there was no possibility for pooling of combined data for meta-analysis or reliable comparison of results across studies.

Implications for Practice/research

There is a lack of high quality evidence to support the routine use of non-slip socks for preventing falls, improving function or confidence. No studies were found that evaluated cost-effectiveness or included confidence as an outcome measure. Further high quality research is needed to be able to establish effectiveness, and cost-effectiveness of non-slip socks for preventing falls, increasing function and confidence.

What would you tweet? (140 characters)

There is insufficient evidence to support the routine use of non-slip socks for adults in rehabilitation hospital settings to prevent falls.

Critical Appraisal Topic Group Team Members

James Abogada, Nova Caruana, Emmah Doig, Kate Follent, Tatjana Monsch, Cecelia Boyd Orford, Clare Pekin, Nicole Rayner, Jacob Reed, Rebecca Scaumuller, Lisa Wright.

References

Hartung B & Lalonde M. The use of non-slip socks to prevent falls among hospitalised older adults: a literature review. *Geriatr Nurs*. 2017 Sept-Oct;38(5):412-416. doi: 10.1016/j.gerinurse.2017.02.002.

Jazayeri D, Heng H, Slade SC, Seymour B, Lui R, Volpe D, Jones C, Morris ME. Benefits and risks of non-slip socks in hospitals: a rapid review. *Int J Qual Health Care*. 2021 Apr 9;33(2):mzab057. doi: 10.1093/intqhc/mzab057