Supplementary Materials

The Relationship Between Non-suicidal Self-Injury and Executive Functions: A Meta-Analysis

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Supplementary Material 1

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.	Title page
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	p.1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	p.2-5
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	p.4-5
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	p.5
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.	p.5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	p.5
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.	p.6
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.	p.6
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.	p.6
	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.	p.6
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.	p.6
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.	p.6-7
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	p.7
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	p.6-7
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	p.8-19
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the	p.7

Section and Topic	Item #	Checklist item	Location where item is reported
		model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	p.7
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	p.7
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	p.7
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	p.7
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.	p.7-8
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Fig.1
Study characteristics	17	Cite each included study and present its characteristics.	Tab.1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Fig.5
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.	Fig.2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	p.15-18
	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.	Tab.2, Fig.2
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	p.15-18
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	p.18
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	p.17-18
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Tab.2
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	p.18-23
	23b	Discuss any limitations of the evidence included in the review.	p.18-23
	23c	Discuss any limitations of the review processes used.	p.18-23
	23d	Discuss implications of the results for practice, policy, and future research.	p.18-23
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.	Title Page
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Title Page

Section and Topic	Item #	Checklist item	Location where item is reported
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Title Page
Competing interests	26	Declare any competing interests of review authors.	Title Page
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.	Title Page

Table. S2 Suggested Tabular Presentation for QUADAS-2 Results

Index	Study Name	Risk of Bias				Applicability Concerns		
		Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard
1	Allen et al., 2015	High	Low	Unclear	Low	Low	Low	Low
2	Allen et al., 2017	High	Low	Unclear	Low	Low	Low	Low
3	Allen et al., 2019	High	Low	Unclear	Low	Low	Low	Low
4	Allen et al., 2020	High	Low	Unclear	Low	Low	Low	Low
5	Basgoze et al., 2023	Unclear	Low	Unclear	Low	Low	Low	Low
6	Chen et al., 2023	Unclear	Low	Unclear	Low	Low	Low	Low
7	Dixon et al., 2014	Unclear	Low	Unclear	Low	Low	Low	Low
8	Drabble et al., 2014	High	Low	Unclear	Low	Low	Low	Low
9	Esmaeilian et al., 2021	High	Low	Unclear	Low	Low	Low	Low
10	Fikke et al., 2011	High	Low	Unclear	Low	Low	Low	Low
11	Glenn et al., 2010	High	Low	Unclear	Low	Low	Low	Low
12	Hu et al., 2021	High	Low	Unclear	Low	Low	Low	Low
13	Hu et al., 2024	High	Low	Unclear	Low	Low	Low	Low
14	Janis et al., 2009	High	Low	Unclear	Low	Low	Low	Low
15	Kim et al., 2020	High	Low	Unclear	Low	Low	Low	Low
16	Kim et al., 2024	High	Low	Unclear	Low	Low	Low	Low
17	Lee et al., 2021	High	Low	Unclear	Low	Low	Low	Low
18	Leno et al., 2019	Low	Low	Unclear	Low	Low	Low	Low
19	Liu et al., 2022	Low	Low	Unclear	Low	Low	Low	Low
20	Liu et al., 2024	Low	Low	Unclear	Low	Low	Low	Low
21	Lu et al., 2024	Low	Low	Unclear	Low	Low	Low	Low

22	Lutz et al., 2022	High	Unclear	Unclear	Unclear	Low	Low	Low
23	Malejko et al., 2022	High	Low	Unclear	Unclear	Low	Low	Low
24	McCloskey et al., 2012	High	Low	Low	Unclear	Low	Low	Low
25	Mirabella et al., 2024	High	Low	Low	Low	Low	Low	Low
26	Mürner et al., 2022	Low	Low	Low	Low	Low	Low	Low
27	Mürner et al., 2023	Low	Low	Low	Low	Low	Low	Low
28	Nilsson et al., 2021	Low	Low	Low	Low	Low	Low	Low
29	Polanco et al., 2015	Low	Low	Low	Low	Low	Low	Low
30	Tschan et al., 2017	Low	Low	Low	Low	Low	Low	Low
31	Vega et al., 2015	Low	Low	Low	Low	Low	Low	Low
32	Wang et al., 2023	Low	Low	Low	Low	Low	Low	Low
33	Zhang et al., 2021	Low	Low	Low	Low	Low	Low	Low

Figure. S1 Meta-regression of the association between NSSI and EF by mean age of the sample

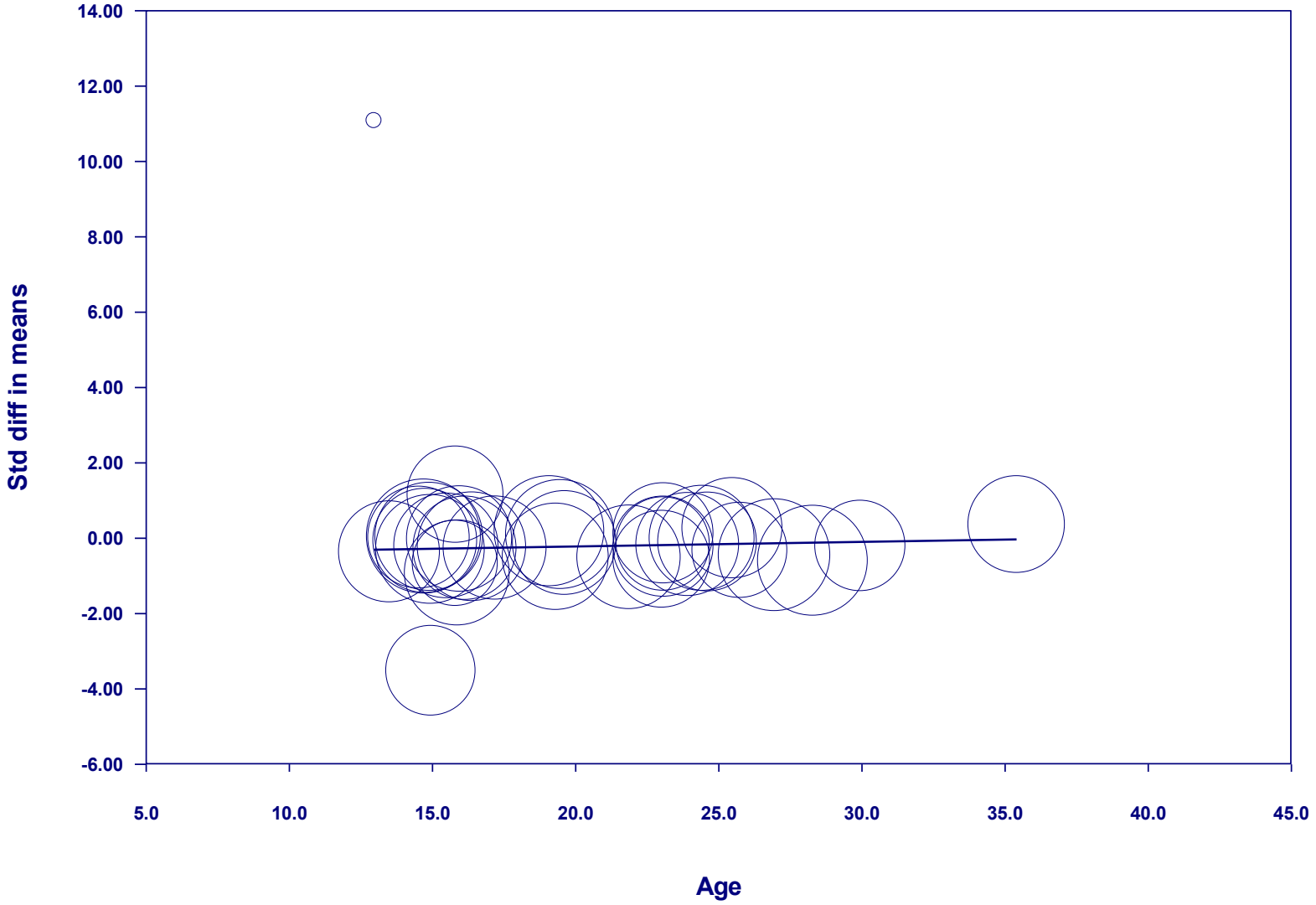


Figure. S2 Meta-regression of the association between NSSI and EF by proportion of female participants

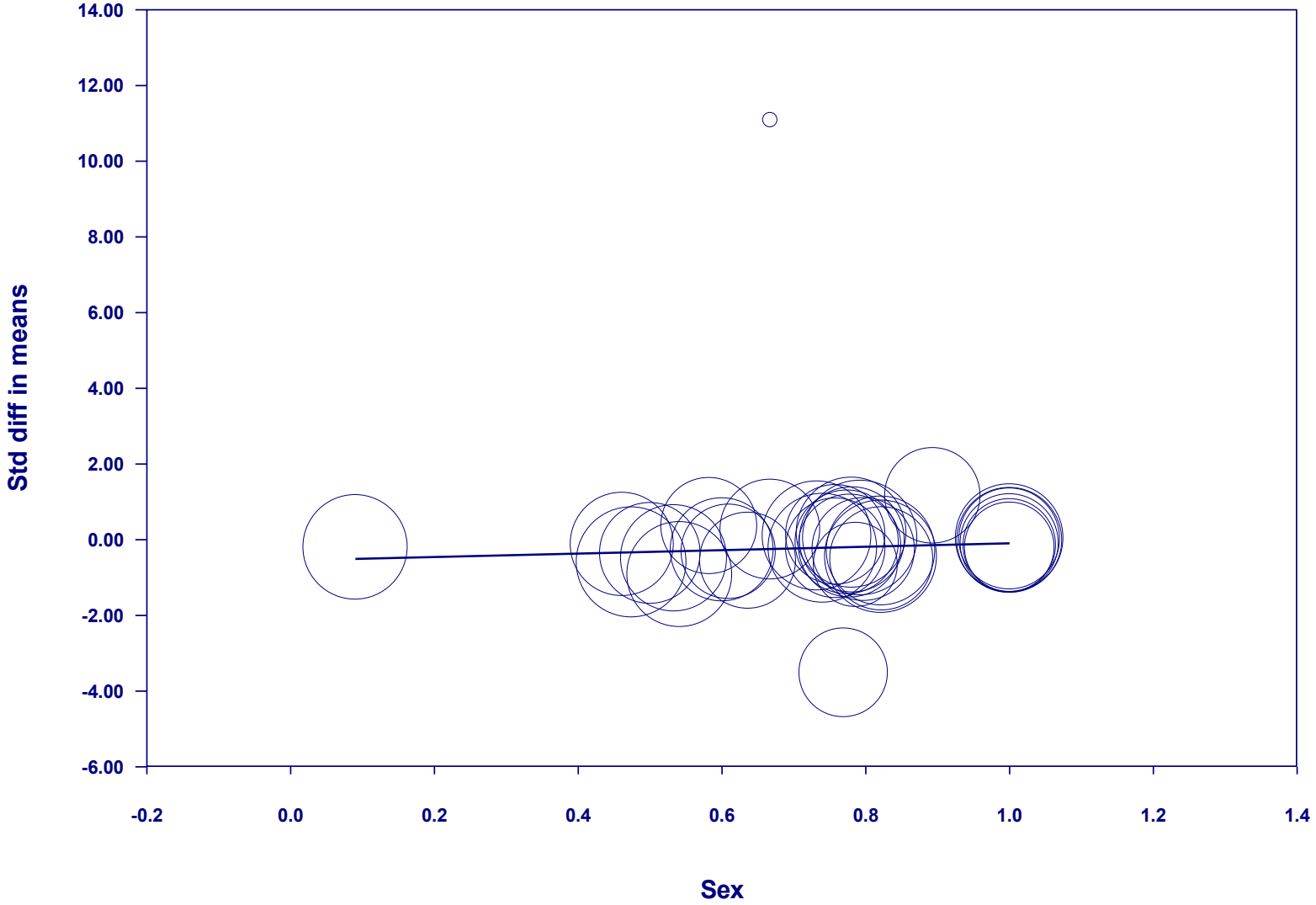
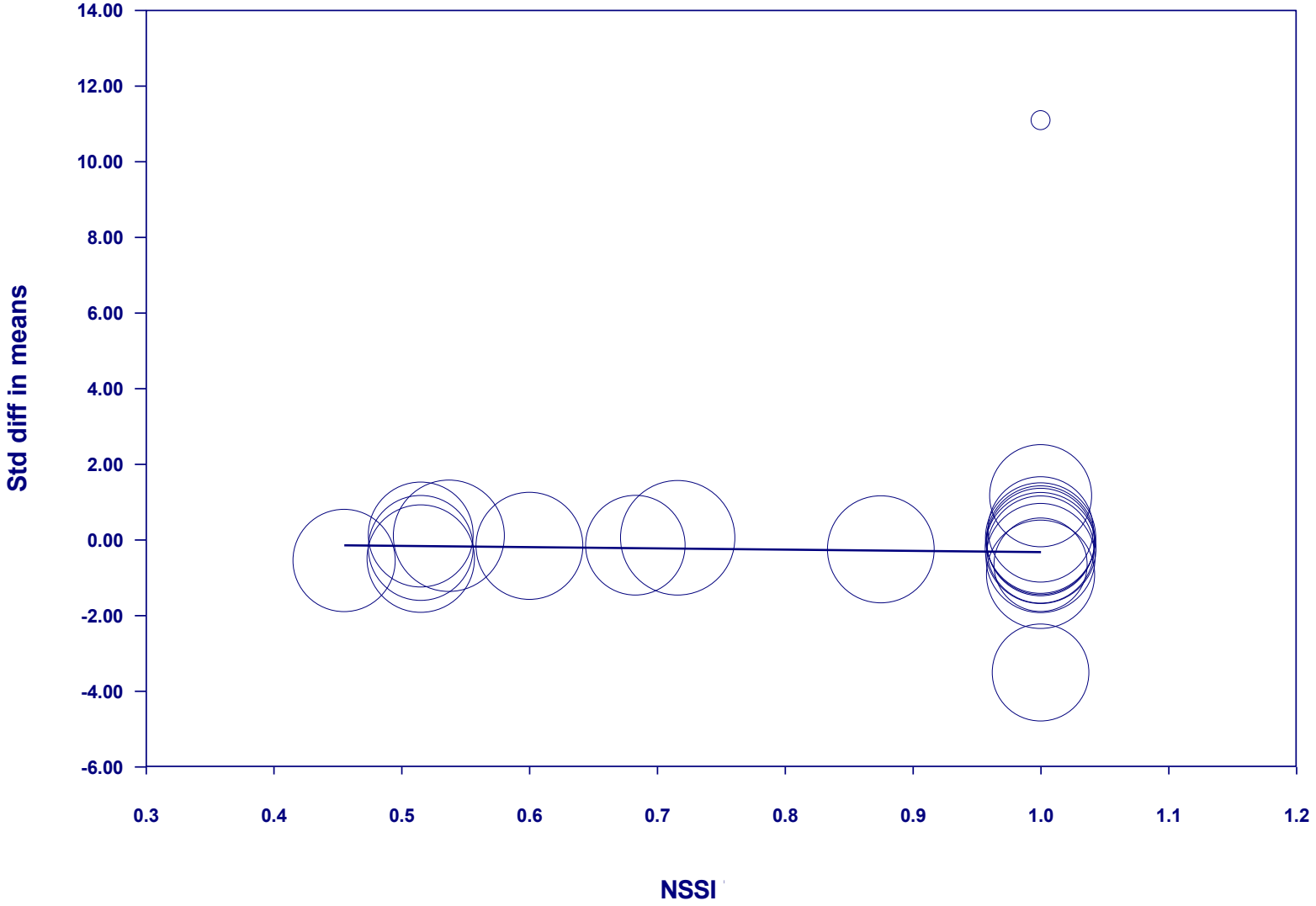


Figure. S3 Meta-regression of the association between NSSI and EF by one-year NSSI incidence rate



Supplementary Material 2

Quality Assessment of Diagnostic Accuracy Studies-2（QUADAS-2）

Phase 1: State the review question:

Patients (setting, intended use of index test, presentation, prior testing):
Index test(s):
Reference standard and target condition:

Phase 2: Draw a flow diagram for the primary study

Phase 3: Risk of bias and applicability judgments

QUADAS-2 is structured so that 4 key domains are each rated in terms of the risk of bias and the concern regarding applicability to the research question (as defined above). Each key domain has a set of signalling questions to help reach the judgments regarding bias and applicability.

DOMAIN 1: PATIENT SELECTION

A. Risk of Bias

Describe methods of patient selection:

- ❖ Was a consecutive or random sample of patients enrolled? Yes/No/Unclear
- ❖ Was a case-control design avoided? Yes/No/Unclear
- ❖ Did the study avoid inappropriate exclusions? Yes/No/Unclear

Could the selection of patients have introduced bias? RISK: LOW/HIGH/UNCLEAR

B. Concerns regarding applicability

Describe included patients (prior testing, presentation, intended use of index test and setting):

Is there concern that the included patients do not match CONCERN: LOW/HIGH/UNCLEAR the review question?

DOMAIN 2: INDEX TEST(S)

If more than one index test was used, please complete for each test.

A. Risk of Bias

Describe the index test and how it was conducted and interpreted:

❖ Were the index test results interpreted without Yes/No/Unclear knowledge of the results of the reference standard?

❖ If a threshold was used, was it pre-specified? Yes/No/Unclear Could the conduct or interpretation of the index test RISK: LOW /HIGH/UNCLEAR have introduced bias?

B. Concerns regarding applicability

Is there concern that the index test, its conduct, or interpretation differ from the review question? CONCERN: LOW /HIGH/UNCLEAR

DOMAIN 3: REFERENCE STANDARD

A. Risk of Bias

Describe the reference standard and how it was conducted and interpreted:

❖ Is the reference standard likely to correctly classify the target Yes/No/Unclear condition?

❖ Were the reference standard results interpreted without Yes/No/Unclear knowledge of the results of the index test?

Could the reference standard, its conduct, or its RISK: LOW /HIGH/UNCLEAR interpretation have introduced bias?

B. Concerns regarding applicability

Is there concern that the target condition as defined by CONCERN: LOW /HIGH/UNCLEAR the reference standard does not match the review question?

DOMAIN 4: FLOW AND TIMING

A. Risk of Bias

Describe any patients who did not receive the index test(s) and/or reference standard or who were excluded from the 2x2 table (refer to flow diagram):

Describe the time interval and any interventions between index test(s) and reference standard:

- Was there an appropriate interval between index test(s) Yes/No/Unclear and reference standard?
- Did all patients receive a reference standard? Yes/No/Unclear
- Did patients receive the same reference standard? Yes/No/Unclear
- Were all patients included in the analysis? Yes/No/Unclear Could the patient flow have introduced bias? RISK: LOW /HIGH/UNCLEAR