

Research Question

Which occupational therapy (OT) assessments use keyform maps and Rasch analysis to support accurate interpretation of assessment data and client-centered intervention planning?

Introduction

Effective intervention planning is a fundamental pillar in occupational therapy, aimed at improving the health and well-being of clients. Addressing diverse client needs depends on valid and reliable assessment tools. Psychometric techniques, such as Rasch analysis and keyform maps, offer robust solutions for improving assessment accuracy and streamlining intervention planning. These tools help occupational therapists to identify the "just-right challenge" for individual clients, optimizing engagement and therapeutic outcomes. This systematic review aimed to identify, evaluate, and synthesize current literature on applying keyform maps and Rasch analysis in occupational therapy intervention planning to determine their efficacy in enhancing assessment and client outcomes.

Method

- **Date of search:** Broad search May 15, 2025, and May 22, 2025; Additional search May 30, 2025
- **Databases:** PubMed, OT Seeker, Google Scholar, Web of Science, CINAHL Complete, American Journal of Occupational Therapy, EBSCO via Hawai'i Pacific University's online library database
- **Inclusion criteria:** Peer-reviewed, English, published 2018-2025, use of keyform maps or tools from Rasch Analysis, evidence of client-centered intervention planning
- **Exclusion criteria:** Systematic reviews, scoping reviews, dissertations, conference abstracts, editorials, or opinion pieces without empirical data, and presentations
- **Search terms:** "occupational therapy" or "occupational therapist" or "occupational therapists" or "ot" and "keyform maps" or "rasch analysis"

Figure 1. Completed Keyform Map Example

	A	B	C	D	E	F	G
1	UIC Fear of Falling Measure						
2	Hierarchy Order		Rating				
3	WALK WHEN ICY		1	Items Causing Most Worry			
4	BUNDLES POORLY LIT STAIRS		1				
5	STEP STOOL KITCHEN CABNETS		1				
6	POORLY LIT STAIRS		1				
7	STAND MOVING BUS		1				
8	UP BUS STAIRS		1				
9	GET IN/OUT BATHTUB		1				
10	BUNDLES WELL LIT STAIRS		1	Longer Term Goals			
11	STEP OFF STREET CURB		2				
12	WALK CROWDED SIDEWALK		1				
13	WELL LIT STAIRS		1	Shorter Term Goals			
14	ESCALATOR		2				
15	TAKE A WALK		3				
16	GET IN/OUT CAR		3				
17	CARRY FULL PLATE		3				
18	PICK UP LIGHTWEIGHT		3				
19	GET IN/OUT BED		3				
20	GET ON/OFF TOILET		3	Items Causing Least Worry			
21	Estimated Fear of Falling Score Total		32 / 54				
22	RATING SCALE						
	1=very worried						
	2=moderately worried						
	3=not worried at all						

Source: Photo from patientprogress.org

Figure 2. Keyform Map Results to Track Progression

#	TASK NAME	GMU	1ST ASSESSMENT	2ND ASSESSMENT	3RD ASSESSMENT	4TH ASSESSMENT
43	HOP ON 1 FOOT	123	-	-	-	-
42	JUMP WITH 2 FEET	121	-	-	-	-
41	RUN	118	-	-	-	-
40	KICK BALL	113	-	-	-	-
39	STAIRS DOWN WITHOUT RAIL	110	-	-	-	-
38	STAIRS UP WITHOUT RAIL	108	-	-	-	-
37	WALK ALONG STRAIGHT LINE	105	-	-	-	0
36	STEP OVER STICK	105	-	-	-	0
35	WALK BACKWARD	105	-	-	-	1
34	STAND 1 FOOT UNSUPPORTED	105	-	-	-	1
33	WALK HOLDING OBJECT	105	-	-	0	1
32	STAIRS DOWN HOLDING 1 RAIL	101	-	-	1	-
31	WALK UNSUPPORTED	100	-	-	0	-
30	STAIRS UP HOLDING 1 RAIL	98	-	-	1	-
29	STAND PICK UP OBJECT FROM FLOOR	94	-	-	1	-
28	STAND HOLD ON WITH 1 HAND LIFT FOOT	95	-	-	1	-
27	WALK WITH 1 HAND HELD	90	-	-	1	-
26	HIGH KNEE TO STAND	87	-	-	-	-
25	HIGH KNEE WALK FORWARD	86	-	0	-	-
24	STAND TO SIT	84	-	1	-	-
23	SIT TO STAND UNSUPPORTED	81	-	0	-	-
22	WALK WITH 2 HANDS HELD	80	-	1	-	-
21	FLOOR TO SIT ON BENCH	74	-	1	-	-
20	CRUISE HOLDING FURNITURE	72	0	-	-	-
19	SIT TO HIGH KNEE UNSUPPORTED	71	0	-	-	-
18	CRAWL 4-POINT RECIPROCALLY	66	1	-	-	-
17	4-POINT POSITIONAL REACH	63	1	-	-	-
16	SIT TO 4-POINT CRAWL POSITION	60	-	-	-	-
15	PULL SIT FLOOR TO STAND	59	-	-	-	-
14	PRONE TO 4-POINT	58	-	-	-	-
13	STAND UNSUPPORTED	58	-	-	-	-
12	4-POINT CRAWL POSITION TO SIT	58	-	-	-	-
11	SIT LOWERS TO PRONE	52	-	-	-	-
10	4-POINT MAINTAINS	47	-	-	-	-

Source: Photo from patientprogress.org

Results

Six articles met the inclusion criteria with relevant information regarding the use of keyform maps in intervention planning. The studies were analyzed according to risk of bias, level of evidence, and quality. Levels of evidence included: 1 Level II, 2 Level III, 1 Level V, and 2 Level IV studies There were two themes that emerged from the studies related to psychometric strength and application to the OT process.

Discussion

Assessment is a key feature of OT practice, though it is insufficiently employed due to high workloads and poor perceived clinical applicability. Keyform Ability Maps & Rasch analysis may be effective to improve intervention planning for OT practitioners, providing an evidence-based, structured approach to service delivery. In ranking assessment tasks by difficulty, treatment can be based on those most aligned with the client's current functional level, contributing to improved therapeutic outcomes. Through the lens of Rasch analysis and Keyform Ability Maps, assessment can directly contribute to intervention planning, simultaneously reducing clinician workload and improving the quality of OT services.

Conclusion

Using assessment tools with Keyform Ability Maps developed through Rasch analysis can enhance occupation-focused intervention planning, as supported by current evidence. Further research is needed to confirm the effectiveness these methods in occupation-specific assessments.

References

