

Geriatric Cognitive Function Assessment for Physiotherapists

Authors

- Asha Wettasinghe, University of Colombo, Sri Lanka
- KRM Chandrathilaka, University of Colombo, Sri Lanka
- Kaveera Senanayake, University of Colombo, Sri Lanka
- Sabela Rivas Neira, University of A Coruña, Spain
- Jamile Vivas Costa, University of A Coruña, Spain

Consortium CAPAGE

- University of Applied Sciences FH JOANNEUM, Austria
- JAMK University of Applied Sciences, Finland
- Santa Maria Health School, Portugal
- University of A Coruña, Spain
- Eastern University, Sri Lanka
- General Sir John Kotelawala Defence University, Sri Lanka
- University of Colombo, Sri Lanka
- University of Jaffna, Sri Lanka
- University of Peradeniya, Sri Lanka
- University of Ruhuna, Sri Lanka

Lecture outcomes

- Understand the importance of early cognitive screening in older adults
- Recognize the role of physiotherapists in identifying and managing cognitive impairments
- Describe the prevalence and burden of dementia, especially in South Asia and Sri Lanka
- Identify and differentiate commonly used cognitive screening tools (e.g., MMSE, MoCA, Mini-Cog, TMT, ACE)

Importance of Cognitive Assessment in Geriatrics

1. Early detection of cognitive decline
2. Plan treatments based on the individual's cognitive abilities
3. Prevention of complications associated with cognitive impairments
4. Enhance compliance with rehabilitative exercises
5. Support caregivers in communication techniques and safety measures
6. Monitor the progression and improvement of cognitive functions

Role of the Physiotherapist in Early Identification and Management of Cognitive Impairments

1. Cognitive screening during routine assessments
2. Integrating cognitive elements into the treatment plan
3. Refer identified cognitively impaired patients to specialists

Prevalence of Cognitive Impairment and Dementia in Older Adults

■ Global Dementia Prevalence (2023)

- Over 55 million people are living with dementia
- Nearly 10 million new cases annually
- The global prevalence in people aged 60 and above is estimated to be around 5–8%

■ Higher Prevalence in South Asia Compared to Global Averages

- South Asian countries generally show higher prevalence rates due to underdiagnosis, limited awareness, and fewer healthcare resources
- A meta-analysis estimated dementia prevalence in South Asia to be 6.5–10% in adults over 60

- **Sri Lanka's Dementia Prevalence Exceeds Regional Averages**

- Sri Lanka shows dementia prevalence rates of around 11.8% in some studies

- **Faster Aging in Sri Lanka Elevates Risk**

- Sri Lanka is among the fastest-aging countries in South Asia
- By 2050, nearly one in four Sri Lankans will be over 60
- This will significantly increase the national dementia burden compared to many other low- and middle-income countries

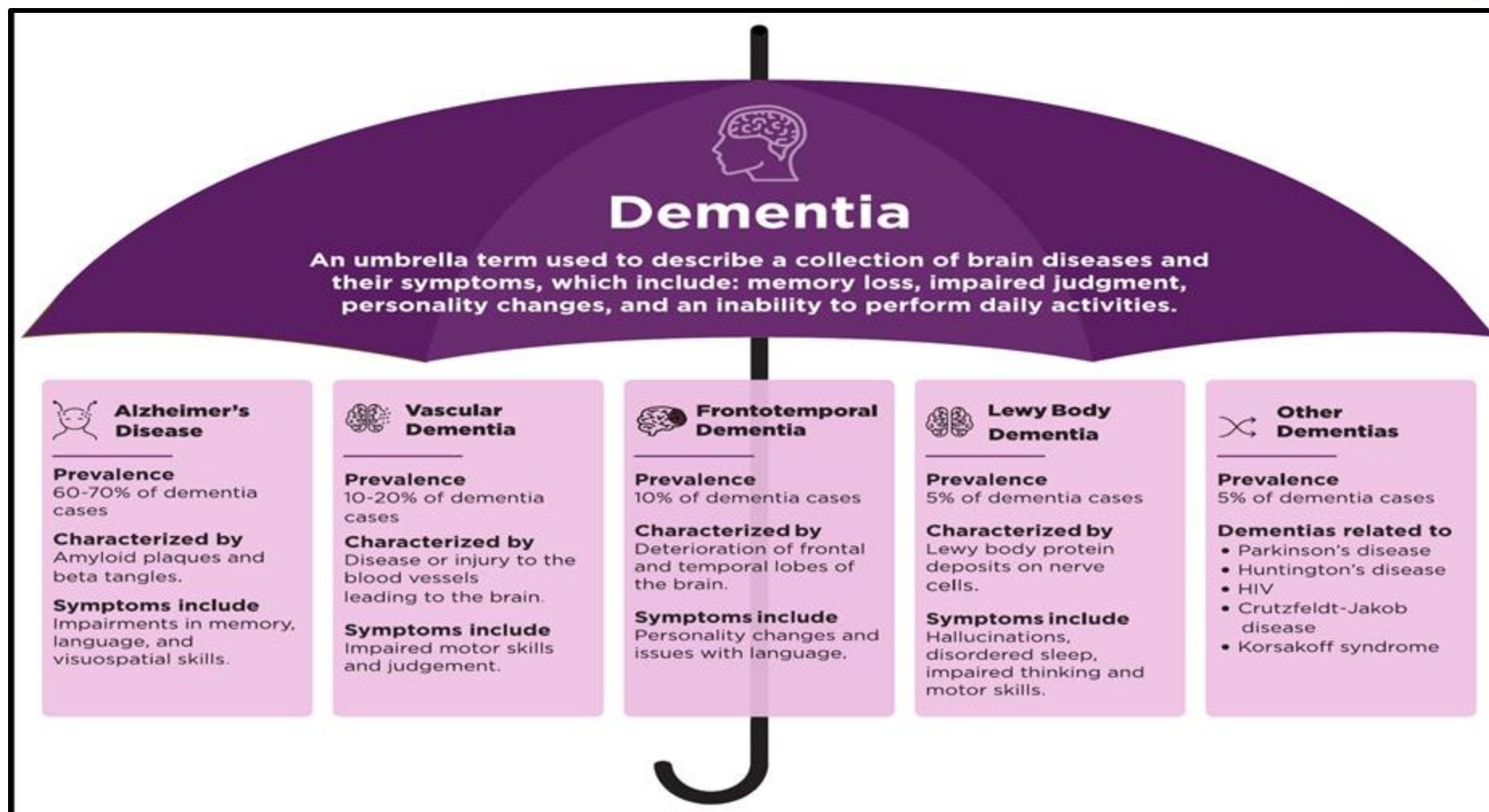


Image source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.summerfieldredlands.com%2Funderstanding-the-umbrella-of-dementia%2F&psig=AOVaw1Odsg5Sgh0waD1revDsBYW&ust=1759721692163000&source=images&cd=vfe&opi=89978449&ved=0CBUQjRxqFwoTCliQ86S QjJADFQAAAAAdAAAAABAE>

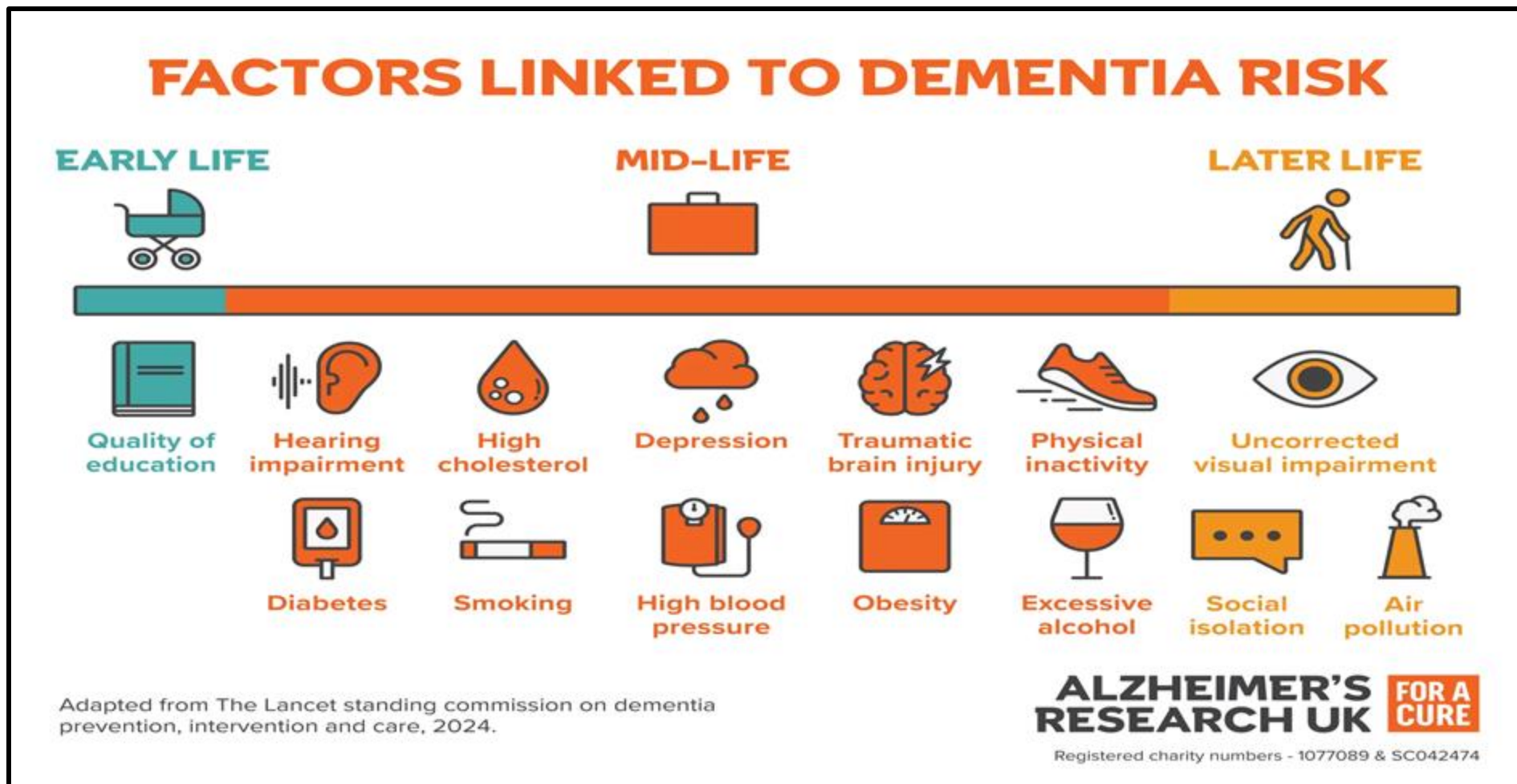


Image source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.alzheimersresearchuk.org%2Fnews%2Fearly-half-of-global-dementia-cases-could-be-prevented-or-delayed-by-addressing-14-health-and-lifestyle-factors-says-new-report%2F&psig=AOvVaw1TSMaf9Sut6Cz4WJJBBEut&ust=1759721754784000&source=images&cd=vfe&opi=89978449&ved=0CBUqJRxqFwoTCNDmnsKQjJADFQAAAAAdAAAAABAE>

1
Memory loss

2
Difficulty performing familiar tasks

3
Problems with language

4
Disorientation to time and place

5
Poor or decreased judgement

6
Problems keeping track of things

7
Misplacing things

8
Changes in mood and behaviour

9
Challenges understanding visual and spatial information

10
Withdrawal from work or social activities

10 warning signs of dementia

If these signs are new, they may be a sign of dementia.
Dementia is not a normal part of ageing.
Speak to your doctor or contact your dementia and Alzheimer association.

www.alzint.org

Alzheimer's Disease International
The global voice on dementia

Image source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.alzint.org%2Fresource%2Fwarning-signs-of-dementia-infographic%2F&psig=AOvVaw02Pk6XqicWVsnNcWHY7KVI&ust=1759721823727000&source=images&cd=vfe&opi=89978449&ved=0CBUQjRxqFwoTCJCxteOQjJADFQAAAAAdAAAAABAE>

7 Stages of Dementia

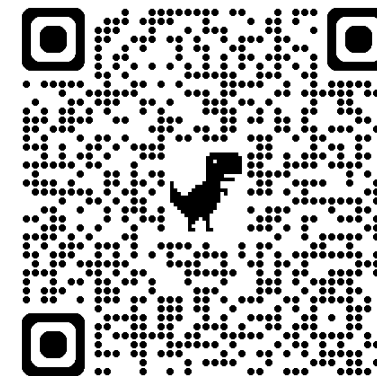
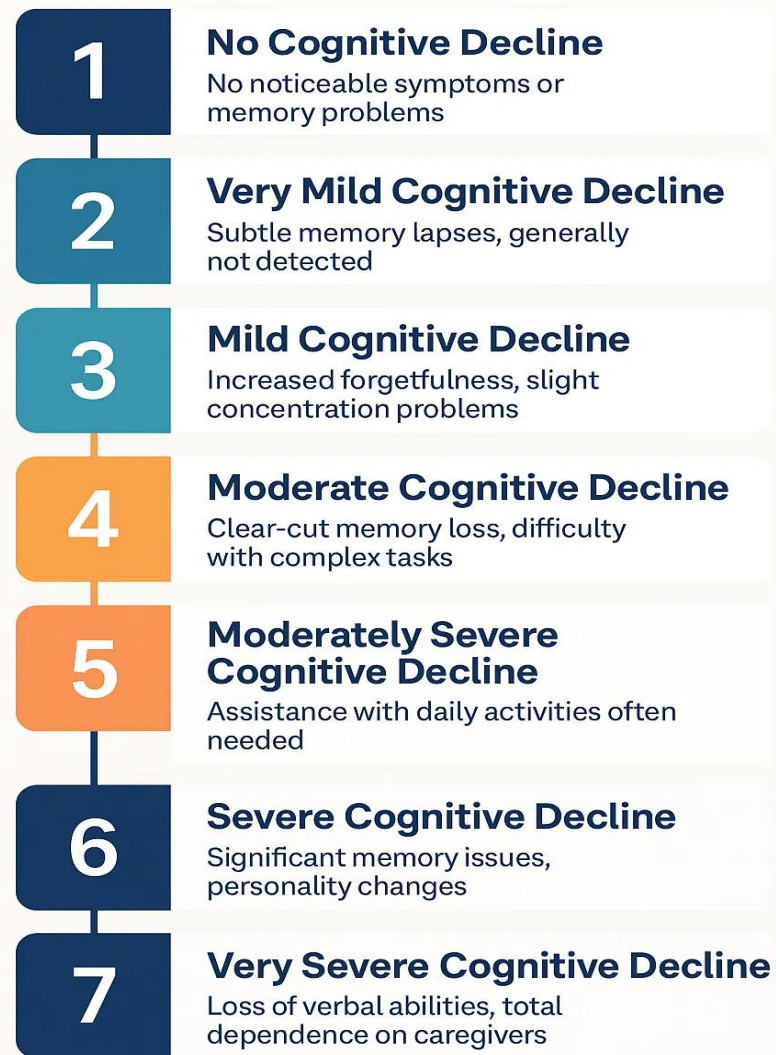


Image source: <https://www.nccdp.org/understanding-the-seven-stages-of-dementia-a-guide-for-caregivers-and-professionals/>

Principles of Cognitive Assessment

1. Holistic Approach
 - Assess multiple cognitive domains
 - Memory, attention, language, executive function, visuospatial and spatio-temporal orientation abilities
2. Use of standardized tools
 - Employ validated screening instruments to ensure consistency and reliability
3. Consideration of baseline function and education
 - Interpret results in the context of the individual's premorbid abilities, education level, and cultural background to avoid misdiagnosis due to normal aging or low literacy
4. Early detection and monitoring
 - Aim for early identification of cognitive decline and track changes over time
5. Incorporation of functional impact
 - Assess how cognitive changes affect daily activities

Cognitive Screening Tools Overview

- Choose tools with high sensitivity and specificity
- **Tools for use in clinical practice**
 1. Min-Cog Assessment Tool
 2. Montreal Cognitive Assessment (MoCA)
 3. Mini-Mental State Examination (MMSE)
 4. Trail Making Test (TMT) Part A & B
 5. Addenbrooke's Cognitive Examination (ACE)
- These tools can be effectively used in outpatient clinics, inpatient wards, rehabilitation centers, and even during home visits

Min-Cog Assessment Tool

Mini-Cog®

Instructions for Administration & Scoring

ID: _____ Date: _____

Step 1: Three Word Registration

Look directly at person and say, "Please listen carefully. I am going to say three words that I want you to repeat back to me now and try to remember. The words are [select a list of words from the versions below]. Please say them for me now." If the person is unable to repeat the words after three attempts, move on to Step 2 (clock drawing).

The following and other word lists have been used in one or more clinical studies.¹⁻⁷ For repeated administrations, use of an alternative word list is recommended.

Version 1	Version 2	Version 3	Version 4	Version 5	Version 6
Banana	Leader	Village	River	Captain	Daughter
Sunrise	Season	Kitchen	Nation	Garden	Heaven
Chair	Table	Baby	Finger	Picture	Mountain

Step 2: Clock Drawing

Say: "Next, I want you to draw a clock for me. First, put in all of the numbers where they go." When that is completed, say: "Now, set the hands to 10 past 11."

Use preprinted circle (see next page) for this exercise. Repeat instructions as needed as this is not a memory test. Move to Step 3 if the clock is not complete within three minutes.

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Say: "What were the three words I asked you to remember?" Record the word list version number and the person's answers below.

Word List Version: _____ Person's Answers: _____

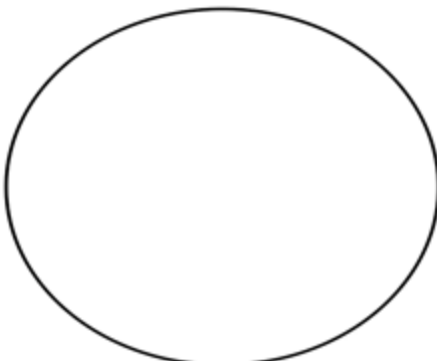
Scoring

Word Recall: _____ (0-3 points)	1 point for each word spontaneously recalled without cueing.
Clock Draw: _____ (0 or 2 points)	Normal clock = 2 points. A normal clock has all numbers placed in the correct sequence and approximately correct position (e.g., 12, 3, 6 and 9 are in anchor positions) with no missing or duplicate numbers. Hands are pointing to the 11 and 2 (11:10). Hand length is not scored. Inability or refusal to draw a clock (abnormal) = 0 points.
Total Score: _____ (0-5 points)	Total score = Word Recall score + Clock Draw score. A cut point of <3 on the Mini-Cog™ has been validated for dementia screening, but many individuals with clinically meaningful cognitive impairment will score higher. When greater sensitivity is desired, a cut point of <4 is recommended as it may indicate a need for further evaluation of cognitive status.

Mini-Cog © S. Borson. All rights reserved. Reprinted with permission of the author solely for clinical and educational purposes. May not be modified or used for commercial, marketing, or research purposes without permission of the author (sborson@uow.edu). v. 01.19.16

Clock Drawing

ID: _____ Date: _____



References

- Borson S, Scanlan JM, Chen PJ et al. The Mini-Cog as a screen for dementia: Validation in a population based sample. J Am Geriatr Soc 2003;51:1451-1454.
- Borson S, Scanlan JM, Watanabe J et al. Improving identification of cognitive impairment in primary care. Int J Geriatr Psychiatry 2006;21: 349-355.
- Lessig M, Scanlan J et al. Time that tells: Critical clock-drawing errors for dementia screening. Int Psychogeriatr. 2008 June; 20(3): 459-470.
- Tsui K, Chan J et al. Cognitive tests to detect dementia: A systematic review and meta-analysis. JAMA Intern Med. 2015; E1-E9.
- McCarten J, Anderson P et al. Screening for cognitive impairment in an elderly veteran population: Acceptability and results using different versions of the Mini-Cog. J Am Geriatr Soc 2011; 59: 309-213.
- McCarten J, Anderson P et al. Finding dementia in primary care: The results of a clinical demonstration project. J Am Geriatr Soc 2012; 60: 210-217.
- Scanlan J & Borson S. The Mini-Cog: Receiver operating characteristics with the expert and naive raters. Int J Geriatr Psychiatry 2001; 16: 216-222.

Mini-Cog © S. Borson. All rights reserved. Reprinted with permission of the author solely for clinical and educational purposes. May not be modified or used for commercial, marketing, or research purposes without permission of the author (sborson@uow.edu). v. 01.19.16

SCAN ME



Montreal Cognitive Assessment (MoCA)

SCAN ME



MONTREAL COGNITIVE ASSESSMENT (MoCA®)
Version 8.3 English

Name: _____ Education: _____ Date of birth: _____
Sex: _____ DATE: _____

VISUOSPATIAL / EXECUTIVE

Copy bed

Draw CLOCK (Five past ten) (3 points)

POINTS

Begin

End

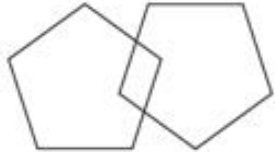
Contour Numbers Hands

NAMING

_____/3

MEMORY	Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.						NO POINTS		
	LEG	COTTON	SCHOOL	TOMATO	WHITE				
1st TRIAL									
2nd TRIAL									
ATTENTION	Read list of digits (1 digit/sec.). Subject has to repeat them in the forward order. [] 2 4 8 1 5 Subject has to repeat them in the backward order. [] 4 2 7						____/2		
	Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors. [] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B						____/1		
	Serial 7 subtraction starting at 60. [] 53 [] 46 [] 39 [] 32 [] 25 4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt						____/3		
LANGUAGE	Repeat: The child walked his dog in the park after midnight. [] The artist finished his painting at the right moment for the exhibition. []						____/2		
	Language Fluency. Name maximum number of words in one minute that begin with the letter B. [] _____ (N ≥ 11 words)						____/1		
ABSTRACTION	Similarity between e.g. banana - orange = fruit [] hammer - screwdriver [] matches - lamp						____/2		
DELAYED RECALL	(MIS)	Has to recall words	LEG	COTTON	SCHOOL	TOMATO	WHITE	Points for UNCUED recall only	____/5
Memory Index Score (MIS)	X3	WITH NO CUE	[]	[]	[]	[]	[]		MIS = ____/15
	X2	Category cue							
	X1	Multiple choice cue							
ORIENTATION	[] Date	[] Month	[] Year	[] Day	[] Place	[] City			____/6
© Z. Nasreddine MD www.mocatest.org MIS: ____/15 (Normal ≥ 26/30)									
Administered by: _____ Training and Certification are required to ensure accuracy. Add 1 point if ≤ 12 yr education								TOTAL ____/30	

Mini-Mental State Examination (MMSE)

The Mini-Mental State Exam		
Patient _____ Examiner _____ Date _____		
Maximum	Score	
5	()	Orientation
5	()	What is the (year) (season) (date) (day) (month)?
		Where are we (state) (country) (town) (hospital) (floor)?
3	()	Registration
		Name 3 objects: 1 second to say each. Then ask the patient all 3 after you have said them. Give 1 point for each correct answer. Then repeat them until he/she learns all 3. Count trials and record.
		Trials _____
5	()	Attention and Calculation
		Serial 7's. 1 point for each correct answer. Stop after 5 answers. Alternatively spell "world" backward.
3	()	Recall
		Ask for the 3 objects repeated above. Give 1 point for each correct answer.
2	()	Language
1	()	Name a pencil and watch.
3	()	Repeat the following "No ifs, ands, or buts"
		Follow a 3-stage command:
		"Take a paper in your hand, fold it in half, and put it on the floor."
1	()	Read and obey the following: CLOSE YOUR EYES
1	()	Write a sentence.
1	()	Copy the design shown.
		
_____		Total Score
ASSESS level of consciousness along a continuum _____		
Alert Drowsy Stupor Coma		

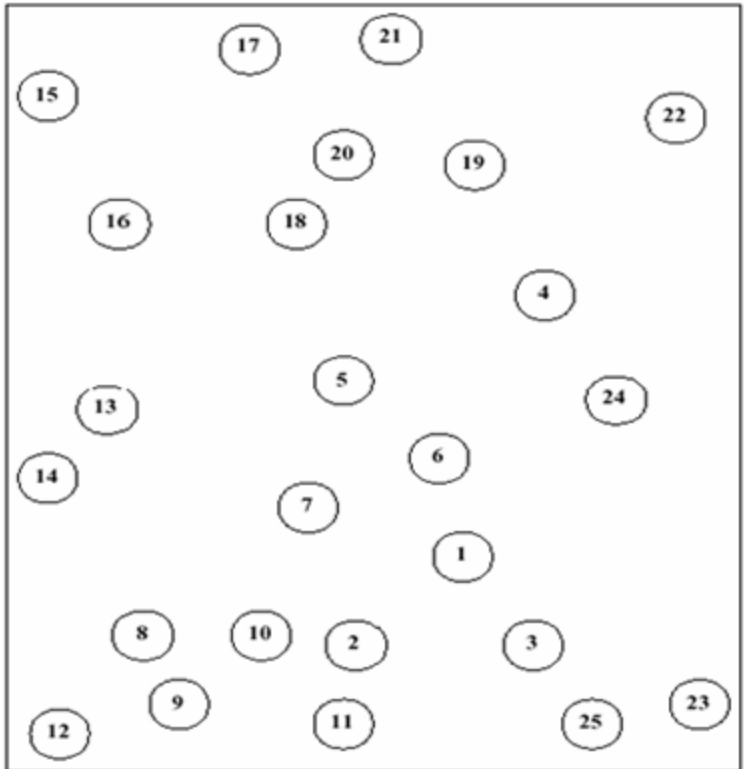
"MINI-MENTAL STATE." A PRACTICAL METHOD FOR GRADING THE COGNITIVE STATE OF PATIENTS FOR THE CLINICIAN. *Journal of Psychiatric Research*, 12(3): 189-198, 1975. Used by permission.

PDF source: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://muhc.ca/sites/default/files/micro/m-PT-OT/OT/Mini-Mental-State-Exam-(MMSE).pdf

Trail Making Test (TMT) Part A & B

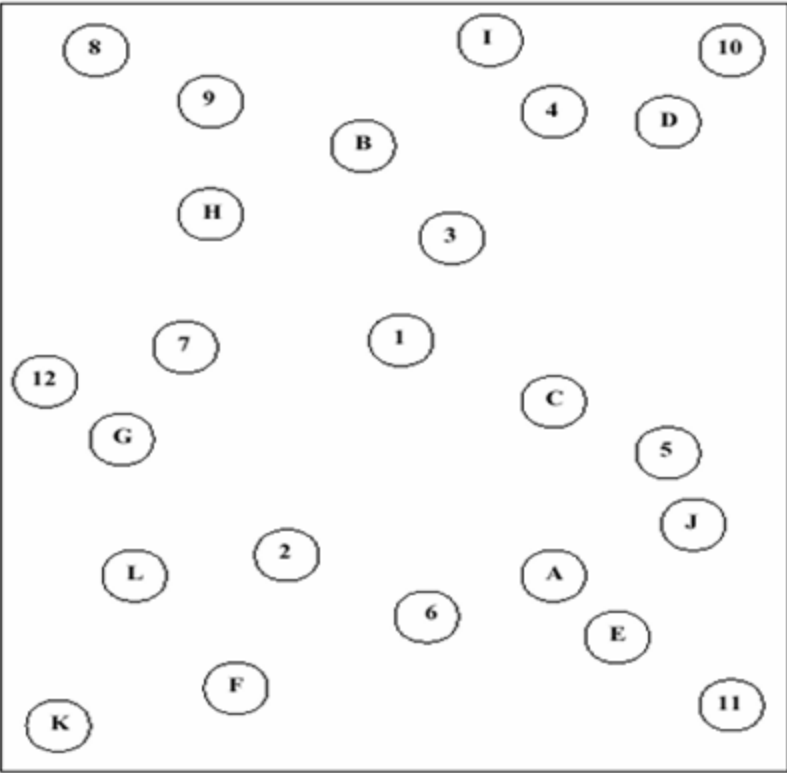
Trail Making Test Part A

Patient's Name: _____ Date: _____



Trail Making Test Part B

Patient's Name: _____ Date: _____



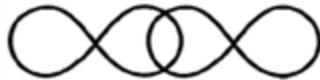
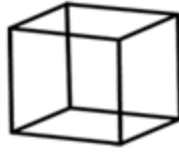
PDF source: chrome-extension://efaidnbmnnnibpcajpcgiclfendmkaj/https://eatspeakthink.com/wp-content/uploads/2018/06/IowaTrailMaking.pdf

Addenbrooke's Cognitive Examination (ACE)

ADDENBROOKE'S COGNITIVE EXAMINATION – ACE-III English Version A (2012)						
Name: _____		Date of testing: ____/____/____				
Date of Birth: _____		Tester's name: _____				
Hospital No. or Address: _____		Age at leaving full-time education: _____				
		Occupation: _____				
		Handedness: _____				
ATTENTION						
➤ Ask: What is the	Day	Date	Month	Year	Season	Attention [Score 0-5]
➤ Ask: Which	No./Floor	Street/Hospital	Town	County	Country	Attention [Score 0-5]
ATTENTION						
➤ Tell: "I'm going to give you three words and I'd like you to repeat them after me: lemon, key and ball." After subject repeats, say "Try to remember them because I'm going to ask you later." ➤ Score only the first trial (repeat 3 times if necessary). ➤ Register number of trials: _____						Attention [Score 0-3]
ATTENTION						
➤ Ask the subject: "Could you take 7 away from 100? I'd like you to keep taking 7 away from each new number until I tell you to stop." ➤ If subject makes a mistake, do not stop them. Let the subject carry on and check subsequent answers (e.g., 93, 84, 77, 70, 63 – score 4). ➤ Stop after five subtractions (93, 86, 79, 72, 65): _____						Attention [Score 0-5]
MEMORY						
➤ Ask: "Which 3 words did I ask you to repeat and remember?" _____						Memory [Score 0-3]
FLUENCY						
➤ Letters Say: "I'm going to give you a letter of the alphabet and I'd like you to generate as many words as you can beginning with that letter, but not names of people or places. For example, if I give you the letter 'C', you could give me words like 'cat, cry, clock' and so on. But, you can't give me words like Catherine or Canada. Do you understand? Are you ready? You have one minute. The letter I want you to use is the letter 'P'."						Fluency [Score 0 – 7]
						0-10 3 11-13 5 14-16 6 17-19 7 20-22 8 23-25 9 26-28 10 29-31 11 32-34 12 35-37 13 38-40 14 41-43 15 44-46 16 47-49 17 50-52 18 53-55 19 56-58 20 59-61 21 62-64 22 65-67 23 68-70 24 71-73 25 74-76 26 77-79 27 80-82 28 83-85 29 86-88 30 89-91 31 92-94 32 95-97 33 98-100 34 101-103 35 104-106 36 107-109 37 110-112 38 113-115 39 116-118 40 119-121 41 122-124 42 125-127 43 128-130 44 131-133 45 134-136 46 137-139 47 140-142 48 143-145 49 146-148 50 149-151 51 152-154 52 155-157 53 158-160 54 161-163 55 164-166 56 167-169 57 170-172 58 173-175 59 176-178 60 179-181 61 182-184 62 185-187 63 188-190 64 191-193 65 194-196 66 197-199 67 200-202 68 203-205 69 206-208 70 209-211 71 212-214 72 215-217 73 218-220 74 221-223 75 224-226 76 227-229 77 230-232 78 233-235 79 236-238 80 239-241 81 242-244 82 245-247 83 248-250 84 251-253 85 254-256 86 257-259 87 260-262 88 263-265 89 266-268 90 269-271 91 272-274 92 275-277 93 278-280 94 281-283 95 284-286 96 287-289 97 290-292 98 293-295 99 296-298 100 299-301 101 302-304 102 305-307 103 308-310 104 311-313 105 314-316 106 317-319 107 320-322 108 323-325 109 326-328 110 329-331 111 332-334 112 335-337 113 338-340 114 341-343 115 344-346 116 347-349 117 350-352 118 353-355 119 356-358 120 359-361 121 362-364 122 365-367 123 368-370 124 371-373 125 374-376 126 377-379 127 380-382 128 383-385 129 386-388 130 389-391 131 392-394 132 395-397 133 398-400 134 401-403 135 404-406 136 407-409 137 410-412 138 413-415 139 416-418 140 419-421 141 422-424 142 425-427 143 428-430 144 431-433 145 434-436 146 437-439 147 440-442 148 443-445 149 446-448 150 449-451 151 452-454 152 455-457 153 458-460 154 461-463 155 464-466 156 467-469 157 470-472 158 473-475 159 476-478 160 479-481 161 482-484 162 485-487 163 488-490 164 491-493 165 494-496 166 497-499 167 500-502 168 503-505 169 506-508 170 509-511 171 512-514 172 515-517 173 518-520 174 521-523 175 524-526 176 527-529 177 530-532 178 533-535 179 536-538 180 539-541 181 542-544 182 545-547 183 548-550 184 551-553 185 554-556 186 557-559 187 560-562 188 563-565 189 566-568 190 569-571 191 572-574 192 575-577 193 578-580 194 581-583 195 584-586 196 587-589 197 590-592 198 593-595 199 596-598 200 599-601 201 602-604 202 605-607 203 608-610 204 611-613 205 614-616 206 617-619 207 620-622 208 623-625 209 626-628 210 629-631 211 632-634 212 635-637 213 638-640 214 641-643 215 644-646 216 647-649 217 650-652 218 653-655 219 656-658 220 659-661 221 662-664 222 665-667 223 668-670 224 671-673 225 674-676 226 677-679 227 680-682 228 683-685 229 686-688 230 689-691 231 692-694 232 695-697 233 698-700 234 701-703 235 704-706 236 707-709 237 710-712 238 713-715 239 716-718 240 719-721 241 722-724 242 725-727 243 728-730 244 731-733 245 734-736 246 737-739 247 740-742 248 743-745 249 746-748 250 749-751 251 752-754 252 755-757 253 758-760 254 761-763 255 764-766 256 767-769 257 770-772 258 773-775 259 776-778 260 779-781 261 782-784 262 785-787 263 788-790 264 791-793 265 794-796 266 797-799 267 800-802 268 803-805 269 806-808 270 809-811 271 812-814 272 815-817 273 818-820 274 821-823 275 824-826 276 827-829 277 830-832 278 833-835 279 836-838 280 839-841 281 842-844 282 845-847 283 848-850 284 851-853 285 854-856 286 857-859 287 860-862 288 863-865 289 866-868 290 869-871 291 872-874 292 875-877 293 878-880 294 881-883 295 884-886 296 887-889 297 890-892 298 893-895 299 896-898 300 899-901 301 902-904 302 905-907 303 908-910 304 911-913 305 914-916 306 917-919 307 920-922 308 923-925 309 926-928 310 929-931 311 932-934 312 935-937 313 938-940 314 941-943 315 944-946 316 947-949 317 950-952 318 953-955 319 956-958 320 959-961 321 962-964 322 965-967 323 968-970 324 971-973 325 974-976 326 977-979 327 980-982 328 983-985 329 986-988 330 989-991 331 992-994 332 995-997 333 998-1000 334 1001-1003 335 1004-1006 336 1007-1009 337 1010-1012 338 1013-1015 339 1016-1018 340 1019-1021 341 1022-1024 342 1025-1027 343 1028-1030 344 1031-1033 345 1034-1036 346 1037-1039 347 1040-1042 348 1043-1045 349 1046-1048 350 1049-1051 351 1052-1054 352 1055-1057 353 1058-1060 354 1061-1063 355 1064-1066 356 1067-1069 357 1070-1072 358 1073-1075 359 1076-1078 360 1079-1081 361 1082-1084 362 1085-1087 363 1088-1090 364 1091-1093 365 1094-1096 366 1097-1099 367 1100-1102 368 1103-1105 369 1106-1108 370 1109-1111 371 1112-1114 372 1115-1117 373 1118-1120 374 1121-1123 375 1124-1126 376 1127-1129 377 1130-1132 378 1133-1135 379 1136-1138 380 1139-1141 381 1142-1144 382 1145-1147 383 1148-1150 384 1151-1153 385 1154-1156 386 1157-1159 387 1160-1162 388 1163-1165 389 1166-1168 390 1169-1171 391 1172-1174 392 1175-1177 393 1178-1180 394 1181-1183 395 1184-1186 396 1187-1189 397 1190-1192 398 1193-1195 399 1196-1198 400 1199-1201 401 1202-1204 402 1205-1207 403 1208-1210 404 1211-1213 405 1214-1216 406 1217-1219 407 1220-1222 408 1223-1225 409 1226-1228 410 1229-1231 411 1232-1234 412 1235-1237 413 1238-1240 414 1241-1243 415 1244-1246 416 1247-1249 417 1250-1252 418 1253-1255 419 1256-1258 420 1259-1261 421 1262-1264 422 1265-1267 423 1268-1270 424 1271-1273 425 1274-1276 426 1277-1279 427 1280-1282 428 1283-1285 429 1286-1288 430 1289-1291 431 1292-1294 432 1295-1297 433 1298-1299 434 1300-1302 435 1303-1305 436 1306-1308 437 1309-1311 438 1312-1314 439 1315-1317 440 1318-1320 441 1321-1323 442 1324-1326 443 1327-1329 444 1330-1332 445 1333-1335 446 1336-1338 447 1339-1341 448 1342-1344 449 1345-1347 450 1348-1350 451 1351-1353 452 1354-1356 453 1357-1359 454 1360-1362 455 1363-1365 456 1366-1368 457 1369-1371 458 1372-1374 459 1375-1377 460 1378-1380 461 1381-1383 462 1384-1386 463 1387-1389 464 1390-1392 465 1393-1395 466 1396-1398 467 1399-1401 468 1402-1404 469 1405-1407 470 1408-1410 471 1411-1413 472 1414-1416 473 1417-1419 474 1420-1422 475 1423-1425 476 1426-1428 477 1429-1431 478 1432-1434 479 1435-1437 480 1438-1440 481 1441-1443 482 1444-1446 483 1447-1449 484 1450-1452 485 1453-1455 486 1456-1458 487 1459-1461 488 1462-1464 489 1465-1467 490 1468-1470 491 1471-1473 492 1474-1476 493 1477-1479 494 1480-1482 495 1483-1485 496 1486-1488 497 1489-1491 498 1492-1494 499 1495-1497 500 1498-1499 501 1500-1502 502 1503-1505 503 1506-1508 504 1509-1511 505 1512-1514 506 1515-1517 507 1518-1520 508 1521-1523 509 1524-1526 510 1527-1529 511 1530-1532 512 1533-1535 513 1536-1538 514 1539-1541 515 1542-1544 516 1545-1547 517 1548-1550 518 1551-1553 519 1554-1556 520 1557-1559 521 1560-1562 522 1563-1565 523 1566-1568 524 1569-1571 525 1572-1574 526 1575-1577 527 1578-1580 528 1581-1583 529 1584-1586 530 1587-1589 531 1590-1592 532 1593-1595 533 1596-1598 534 1599-1601 535 1602-1604 536 1605-1607 537 1608-1610 538 1611-1613 539 1614-1616 540 1617-1619 541 1620-1622 542 1623-1625 543 1626-1628 544 1629-1631 545 1632-1634 546 1635-1637 547 1638-1640 548 1641-1643 549 1644-1646 550 1647-1649 551 1650-1652 552 1653-1655 553 1656-1658 554 1659-1661 555 1662-1664 556 1665-1667 557 1668-1670 558 1671-1673 559 1674-1676 560 1677-1679 561 1680-1682 562 1683-1685 563 1686-1688 564 1689-1691 565 1692-1694 566 1695-1697 567 1698-1699 568 1700-1702 569 1703-1705 570 1706-1708 571 1709-1711 572 1712-1714 573 1715-1717 574 1718-1720 575 1721-1723 576 1724-1726 577 1727-1729 578 1730-1732 579 1733-1735 580 1736-1738 581 1739-1741 582 1742-1744 583 1745-1747 584 1748-1750 585 1751-1753 586 1754-1756 587 1757-1759 588 1760-1762 589 1763-1765 590 1766-1768 591 1769-1771 592 1772-1774 593 1775-1777 594 1778-1780 595 1781-1783 596 1784-1786 597 1787-1789 598 1790-1792 599 1793-1795 600 1796-1798 601 1799-1801 602 1802-1804 603 1805-1807 604 1808-1810 605 1811-1813 606 1814-1816 607 1817-1819 608 1820-1822 609 1823-1825 610 1826-1828 611 1829-1831 612 1832-1834 613 1835-1837 614 1838-1840 615 1841-1843 616 1844-1846 617 1847-1849 618 1850-1852 619 1853-1855 620 1856-1858 621 1859-1861 622 1862-1864 623 1865-1867 624 1868-1870 625 1871-1873 626 1874-1876 627 1877-1879 628 1880-1882 629 1883-1885 630 1886-1888 631 1889-1891 632 1892-1894 633 1895-1897 634 1898-1899 635 1900-1902 636 1903-1905 637 1906-1908 638 1909-1911 639 1912-1914 640 1915-1917 641 1918-1920 642 1921-1923 643 1924-1926 644 1927-1929 645 1930-1932 646 1933-1935 647 1936-1938 648 1939-1941 649 1942-1944 650 1945-1947 651 1948-1950 652 1951-1953 653 1954-1956 654 1957-1959 655 1960-1962 656 1963-1965 657 1966-1968 658 1969-1971 659 1972-1974 660 1975-1977 661 1978-1980 662 1981-1983 663 1984-1986 664 1987-1989 665 1990-1992 666 1993-1995 667 1996-1998 668 1999-2000 669 2001-

Addenbrooke's Cognitive Examination (ACE)

LANGUAGE		
> Ask the subject to repeat: "All that glitters is not gold"	Language (Score 0-1) 	
> Ask the subject to repeat: "A stitch in time saves nine"	Language (Score 0-1) 	
LANGUAGE		
> Ask the subject to name the following pictures:	Language (Score 0-12) 	
		
		
		
		
LANGUAGE		
> Using the pictures above, ask the subject to:	Language (Score 0-4) 	
- Point to the one which is associated with the monarchy - Point to the one which is a marsupial - Point to the one which is found in the Antarctic - Point to the one which has a nautical connection		

LANGUAGE	
> Ask the subject to read the following words: (Score 1 only if all correct)	Language (Score 0-1)
sew pint soot dough height	
VISUOSPATIAL ABILITIES	
> Infinity Diagram: Ask the subject to copy this diagram	Visuospatial (Score 0-1)
	
> Wire cube: Ask the subject to copy this drawing (for scoring, see instructions guide).	Visuospatial (Score 0-2)
	
> Clock: Ask the subject to draw a clock face with numbers and the hands at ten past five. (For scoring see instruction guide: circle = 1, numbers = 2, hands = 2 if all correct).	Visuospatial (Score 0-5)

PDF Source: chrome-extension://efaidnbmn
nnibpcajpcglclefindmk
aj/https://rightdecisio
ns.scot.nhs.uk/media/
ztyhfgfj/ace-iii-2017-
uk-version-a.pdf

Addenbrooke's Cognitive Examination (ACE)

VISUOSPATIAL ABILITIES

➤ Ask the subject to count the dots without pointing to them

Visuospatial [Score 0-4]

VISUOSPATIAL ABILITIES

➤ Ask the subject to identify the letters

Visuospatial [Score 0-4]

MEMORY

➤ Ask "Now tell me what you remember about that name and address we were repeating at the beginning"

Harry Barnes
73 Orchard Close
Kingsbridge
Devon

Memory [Score 0-7]

MEMORY

➤ This test should be done if the subject failed to recall one or more items above. If all items were recalled, skip the test and score 5. If only part was recalled start by ticking items recalled in the shadowed column on the right hand side; and then test not recalled items by telling the subject "ok, I'll give you some hints: was the name X, Y or Z?" and so on. Each recognised item scores one point, which is added to the point gained by recalling.

Jerry Barnes	Harry Barnes	Harry Bradford	recalled
37	73	76	recalled
Orchard Place	Oak Close	Orchard Close	recalled
Oakhampton	Kingsbridge	Dartington	recalled
Devon	Dorset	Somerset	recalled

SCORES

TOTAL ACE-III SCORE		/100
Attention		/18
Memory		/25
Fluency		/14
Language		/25
Visuospatial		/16

PDF Source:
chrome-
extension://efaidnb
mnnnibpcajpcglclef
indmkaj/https://righ
tdecisions.scot.nhs
.uk/media/ztyhfgfj/a
ce-iii-2017-uk-
version-a.pdf

Take home message

- Cognitive decline is common in aging and early detection is vital
- Physiotherapists play a key role in screening and supporting patients with cognitive impairment
- Use validated tools tailored to the individual's background
- Early intervention enhances treatment outcomes, safety, and caregiver support

References

- Livingston G, et al. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *The Lancet*, 396(10248), 413-446.
- Ngandu T, et al. (2015). A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *The Lancet*, 385(9984), 2255-2263.
- Borson, S., Scanlan, J. M., Chen, P., & Ganguli, M. (2003). The Mini-Cog as a screen for dementia: Validation in a population-based sample. *Journal of the American Geriatrics Society*, 51(10), 1451–1454. <https://doi.org/10.1046/j.1532-5415.2003.51465.x>
- Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., ... & Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, 53(4), 695–699. <https://doi.org/10.1111/j.1532-5415.2005.53221.x>
- Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). “Mini-mental state”: A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, 12(3), 189–198. [https://doi.org/10.1016/0022-3956\(75\)90026-6](https://doi.org/10.1016/0022-3956(75)90026-6)
- Reitan, R. M. (1958). Validity of the Trail Making Test as an indicator of organic brain damage. *Perceptual and Motor Skills*, 8(3), 271–276. <https://doi.org/10.2466/pms.1958.8.3.271>
- Mathuranath, P. S., Nestor, P. J., Berrios, G. E., Rakowicz, W., & Hodges, J. R. (2000). A brief cognitive test battery to differentiate Alzheimer's disease and frontotemporal dementia. *Neurology*, 55(11), 1613–1620. <https://doi.org/10.1212/WNL.55.11.1613>

THANK YOU!