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Research article

Translation of the Ibadan Knee/Hip Osteoarthritis Outcome Measure into Igbo Language

***Odole A.C. and Akinpelu A.O.**

Department of Physiotherapy, College of Medicine, University of Ibadan, Ibadan, Nigeria

ABSTRACT: The Ibadan Knee/Hip Osteoarthritis Outcome Measure (IKHOAM), a Nigerian culture and environment-friendly clinical tool was developed at the University of Ibadan, Nigeria for measuring end results of care in patients with knee or Hip Osteoarthritis OA. Translated and validated Yoruba and Hausa versions of IKHOAM are available. The purpose of this study was to translate IKHOAM into Igbo language in order to further promote its use in Igbo speaking parts of Nigeria. The English version of IKHOAM was independently translated to Igbo by two Igbo language experts and the reconciled version went through two rounds of back translation, committee review, cognitive debriefing and pre-testing. Only 3 words on the back-translated version did not connote the meanings in the original English version after the first round of forward-back translation. Evaluation of idiomatic equivalence, semantic equivalence and conceptual equivalence showed that 100% of the questions were similar. The pre-test demonstrated good acceptance and understanding by the target population, with no complaints in 100% of the sample. The study makes the Igbo version of the IKHOAM available, all items were considered adequate by a professional expert group and all items were understood by the target population.

Keywords: Translation, Outcome Measure, Osteoarthritis, Igbo language

INTRODUCTION

The Ibadan Knee/Hip Osteoarthritis Outcome Measure (IKHOAM), a Nigerian culture and environment-friendly clinical tool was developed at the University of Ibadan, Nigeria for measuring end results of care in patients with knee or Hip OA (Akinpelu *et al*, 2007). The tool was made specific to Knee/Hip joints because among Nigerian patients, the knee is the most frequently affected by OA followed by the hip (Akinpelu *et al*, 2007; Ogunlade *et al*, 2005). IKHOAM is a 3 domain, 33-item clinical instrument. Parts 1 and 2 of IKHOAM are patient-report. Part 1 measures the degree of limitations and nature of assistance required in twenty five relevant activities of

daily living on a five (0-4) point ordinal scale. Part 2 measures the degree of participation restriction in three activities on a four (0-3) point ordinal scale. Part 3 comprises five physical performance tests, which is rated by the clinician on five and six (0-5) point ordinal scales. IKHOAM has been shown to demonstrate initial criteria towards validity and responsiveness (Akinpelu *et al*, 2007).

The translation and cultural adaptation of instruments is an internationally recognized method (Li *et al*, 2003; Maneesriwongul & Dixon, 2004; Van widenfelt *et al*, 2005; Grassi-oliveira *et al*, 2006; Akinpelu *et al*, 2006). Translation consists of obtaining a version that is semantically equivalent to the original. Cross-cultural adaptation is necessary when the instrument is intended for use on a target population that is culturally different from that of the original version. This could require the alteration or removal of items from the original scale. Translation is only one step in the adaptation process (Goursand *et al*, 2008)

Nigeria is a multi-ethnic country of over 500 indigenous languages. However with Hausa, Igbo and Yoruba being the three major ones (Babajide, 2001). IKHOAM was originally developed in English, the official language of communication in Nigeria. It has however been reported that a sizeable number of

*Address for correspondence: adesola_odole@yahoo.com

patients in Nigeria do not speak or write English (Akinpelu *et al*, 2006). We therefore recognized the need to translate IKHOAM into the 3 major indigenous languages of Nigeria in order to facilitate its use among this group of patients. In previous studies, we have translated IKHOAM into Yoruba and Hausa languages (Odole *et al*, 2006; Odole and Akinpelu, 2008). The purpose of this study was to translate IKHOAM into Igbo language. This will promote the use of IKHOAM in the Igbo speaking population of Nigeria and ensure that Igbo-speaking patients who do not speak or understand English are not excluded from assessment using IKHOAM.

MATERIALS AND METHODS

We followed the recommended guidelines for the process of translation of self-report measures (Beaton *et al*, 2000) to translate IKHOAM into the Igbo language. The translation was in seven phases (forward-translation, synthesis, back-translation, committee review (first), back-translation, committee review (second) and pre-testing) {figure 1}.

Two linguists proficient in both English and Igbo Languages and whose mother tongue is Igbo independently translated the English version of IKHOAM (appendix 1) into Igbo. They later met to synthesize the two versions and develop a reconciled version. One of the linguistic experts was furnished with the construct the instrument was intended to measure while the other was not. The reconciled version was then back translated into English language by a third linguist who was not associated with the initial translation.

A professional expert panel, composed of two of the developers of IKHOAM, one of the translators, and a physiotherapist, whose mother tongue is Igbo, and who is fluent in both English and Igbo languages evaluated the back-translation for semantic equivalence, idiomatic equivalence and conceptual equivalence. Some items were hitherto revised on the back-translation. The revised translation went through another round of back translation and expert panel review, after which a pre-final translated Igbo version of IKHOAM, was produced. Thirty two patients with knee OA were asked to complete parts 1 and 2 of the consensus Igbo translated version of IKHOAM and they were rated on the physical tests (part 3) by another physiotherapist, fluent in Igbo language. The patients subsequently participated in a cognitive debriefing interview. Each of the patients was asked if there were any words or sentences that were difficult to understand.

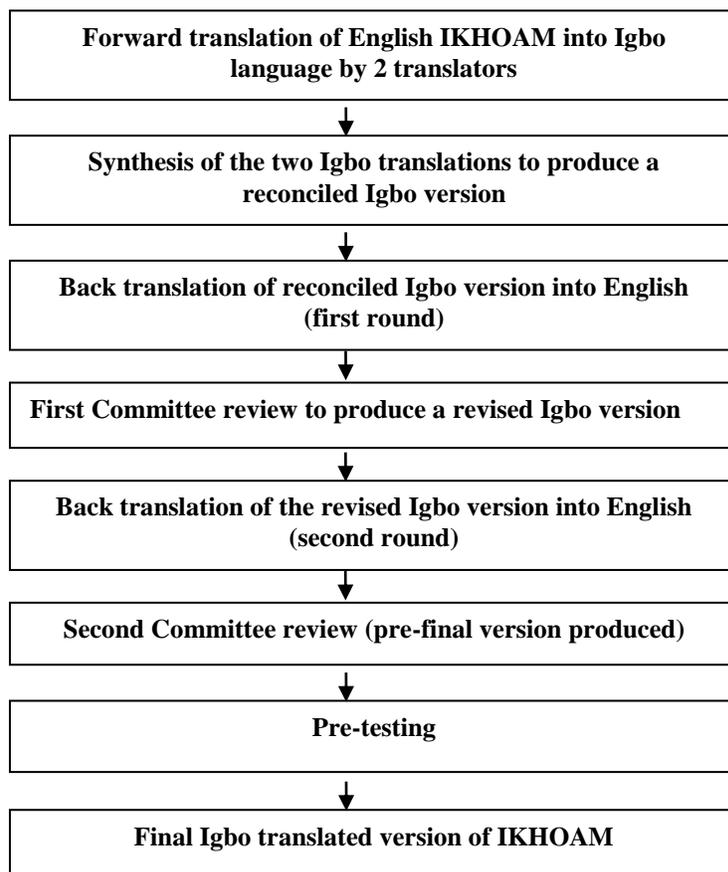


Figure 1
Flow chart of the steps involved in the translation of IKHOAM into Igbo language

For each question, they were asked what they thought the question meant. Both the meaning of the items and the tasks and the chosen response were discussed and a final translated Igbo version of IKHOAM was produced.

RESULTS

Forward translation: The first translation (forward-translation) was performed by two Igbo linguistic experts from the Department of linguistics and African studies, University of Ibadan who translated the English version to Igbo language. A reconciled version was produced by these experts.

Back translation: The reconciled forward-translation was given to two bilingual persons who were not associated with the first translation phase and totally blinded to the original version of the IKHOAM to translate back into English.

Committee review: The first back translation showed that three words did not connote the same meaning as they do in the original English version. These ambiguous words were ‘Abalansili ma oli’(item number 33 (Appendix 2)), ‘obere’(item number 3

(Appendix 2)), ‘ga abalansili’(item number 33(Appendix 2).

A consensus of the back translations was performed by a professional expert panel, composed of two of the developers of IKHOAM, one of the translators, and a Physiotherapist and a patient with knee osteoarthritis whose mother tongue is Igbo and who are fluent in both English and Igbo languages. All of the previous translators' versions of the IKHOAM were taken into consideration. The committee reviewed every detail and every discrepancy among the previous translators and performed a pre-final version of the IKHOAM.

‘Abalansili ma oli’ (in Igbo) connoting balance was changed to ‘anoma anoma’(item number 33 (Appendix 3), ‘obere’ changed to ‘nkpumpu’ meaning short in English (item number 3 (Appendix 3)), ‘ga abalansili’ changed to ‘ga anoma anoma’ connoting can balance in English (item number 33(Appendix 3)). It was observed that there were no appropriate Igbo equivalents of some English words such as “ kitchen cabinet, board, balance, step and hour”. The back-translation went through another round of forward/back translation after which the second back-translated version was evaluated for idiomatic equivalence, semantic equivalence and conceptual equivalence. The expert group reached a consensus that all the wordings and common expressions are acceptable to an average Igbo speaking patient. There were no words holding different conceptual meanings between cultures. A pre-final version was then produced which invariably served as the final version. The expert committee made sure that the final questionnaire would be understood by the equivalent of a 12-year-old (Junior Secondary School Class 2) as is the general recommendation for questionnaires (Guillemin *et al*, 1993).

Pre-testing: In order to ensure that the adapted version still retained its equivalence in an applied situation, the last stage of the translation process was to test the pre-final version in a pilot study. A physiotherapist fluent in Igbo language assessed the patients on the pre-final version. The patients were asked to consider each item in a critical manner and judged whether the questions were understood. All the 32 patients reported clarity of the Igbo language and ease of understanding of all the items. The final version of the Igbo translation of IKHOAM is presented in appendix 2.

DISCUSSION

This study fulfils its objective of making IKHOAM available in another Nigerian indigenous language, Igbo for assessing end results of care in Igbo-literate individuals with knee/hip osteoarthritis. IKHOAM is

probably the first outcome measure to be contributed to English medical literature by any group of researchers from Nigeria. Thus, this is an important contribution to enable Igbo-literate individuals with knee/hip osteoarthritis assess the effectiveness of therapeutic interventions in the Nigerian context. In order to encourage the use of scales and questionnaires in an environment, it is important to translate them into the languages most commonly used within catchment’s area encompassed by the study (Streiner and Norman, 1989).

Yoruba, Igbo and Hausa languages are accepted to be the major indigenous languages spoken in Nigeria. The choice of these languages was neither arbitrary nor political but predicated on the simple and visible fact that the three major languages are far more developed in linguistics and literature than the rest and coupled with the fact that they are more widely used across Nigeria than the rest and are somewhat regarded as regional *lingua franca* vis a vis; Hausa in the North, Yoruba in the West and Igbo in the East (Babajide, 2001). Experts said that 65 percent of the nation’s population speaks one of these languages i.e Hausa is widely spoken in the North, Igbo in the East and the Yoruba in the West. Nigeria is presently on the verge of upgrading its three main local languages namely Yoruba, Igbo and Hausa by translating the 1999 constitution into these languages (Chikelu, 2004). The Yoruba and Hausa versions of IKHOAM are available for use (Odole *et al*, 2006; Odole & Akinpelu, 2008), it is only logical to produce an Igbo version.

The process of translation of IKHOAM from English to Igbo gives credence to the guidelines of Beaton *et al*, 2000. This method is currently used by a number of organizations, including the American Association of Orthopaedic Surgeons (AAOS) Outcomes Committee as they coordinate translations of the different components of their outcome batteries (Beaton *et al*, 2000). Our experience in this study supports the fact that translation of clinical instrument/questionnaire from one language to another is not as simple as often assumed (Akinpelu *et al*, 2006). It is therefore important that Nigerian researchers ensure proper translation of scales and questionnaires to local languages before embarking on studies involving participants who may not be literate in the English, the original language of most questionnaires and scales. Experience in the clinic and during this study also indicates that there are many patients who could not read nor understand English and this justifies the need to translate IKHOAM into the 3 major Nigerian languages.

Though IKHOAM was developed for the same Nigerian culture, translation to Igbo was not as simple

as often assumed. During the process of translating the English version of IKHOAM into Igbo, the meanings of some items were not retained in the first round of back translation. This can be adduced to the fact that there are mild variations in the language and also due to the fact that many English words are spoken along with Igbo language in everyday life in South-eastern Nigeria. It is difficult to hear people speak pure Igbo language without English words. Thus many people do not bother about the Igbo equivalents of such words. The pre-final Igbo version had a high comprehension by all the patients involved in the cognitive debriefing interview. They reported no difficulty in clarity of the language and ease of understanding of all the items. This is probably because there was no cross-cultural adaptation per se, although we followed the guidelines for cross-cultural adaptation by Beaton *et al*, 2000. IKHOAM was only translated into another language within the same cultural context. Cross-cultural adaptation is necessary when the instrument is intended for use on a target population that is culturally different from that of the original version. This could require the alteration or removal of items from the original scale (Goursand *et al*, 2008). The observation from this study of a high comprehension of all items on the Igbo version of IKHOAM by all the patients involved in the cognitive debriefing interview supports the fact that IKHOAM is a Nigerian culture and environment-friendly clinical instrument. It is hoped that the availability of IKHOAM in Igbo language will promote its use among Igbo speaking patients with knee/hip osteoarthritis.

In conclusion, the study makes the Igbo version of the IKHOAM available, all items were considered adequate by a professional expert group and all items were understood by the target population. Investigations on psychometric properties should be carried out to verify the measurement equivalent of this translated version.

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Appendix 1

IBADAN KNEE/HIP OSTEOARTHRITIS OUTCOME MEASURE (IKHOAM)

Part I: Indicate the extent of limitations you experience in carrying out the following activities using these scales:

Degree of difficulty: 4 = no difficulty; 3 = mild difficulty; 2 = moderate difficulty; 1 = severe difficulty; 0 = inability to carry out the activity.

Nature of Assistance: 4 = requires no assistance; 3 = requires use of aid(s)/device(s) only; 2 = requires assistance of one person only; 1 = requires assistance of one person and the use of aid(s); 0 - unable to perform the activity.

	Difficulty	Assistance
1. Washing all body parts during shower.		
2. Walking within the house		
3. Sweeping with a short broom		
4. Walking outside the house for 15-20 minutes		
5. Putting on under clothes		
6. Getting in and out of a salon car		
7. Hand washing of clothes at floor/low level		
8. Rising from bed/mat		
9. Rising from high chair (dining/office chair)		
10. Putting on/lacing shoes or buckling sandals		
11. Rising from an easy chair or sofa		
12. Sweeping with a long brush/broom or using mop stick		
13. Participating in coitus		
14. Incomplete kneeling/prostrating to show courtesy/greet elders		
15. Getting on/off water closet toilet		
16. Getting in and out of a bus/high vehicle		
17. Standing for at least 15 minutes (waiting at bus stop/working in a modern kitchen with high cooker)		
18. Manual grass cutting/hoeing/gardening		
19. Sitting on the heels (Islamic praying posture)		
20. Climbing stairs		
21. Picking things from floor/low level (kitchen cabinet)		
22. Kneeling (Christian praying posture)		
23. Sitting on a very low stool (e.g. when cooking on a low stove or firewood at floor level)		
24. Descending stairs		
25. Using pit/Asiatic toilet		

Part II: Indicate the extent of restriction you experience participating in the following life situations using the scale below
Extent of restriction: 3-full participation, 2- at risk full participation, 1-participation with restriction, 0-no participation

	Extent
1. Performing duties at work (office or at home).	
2. Travelling for one hour or more	
3. Participation in social gatherings (e.g. wedding, naming, funeral, birthday parties)	

Part III: Physical performance tests

250m Walk Test

5	-	able to walk 250m or more at one stretch
4	-	able to walk 200-<250m at one stretch
3	-	able to walk 150-<200m at one stretch
2	-	able to walk 100-<150m at one stretch
1	-	able to walk 50-<100m at one stretch
0	-	able to walk <50m at one stretch

Squat Test

4	-	≥100° knee flexion
3	-	70-99° knee flexion
2	-	40-69° knee flexion
1	-	10-39° knee flexion
0	-	< 10° knee flexion

One leg Stance Test

5	-	can be maintained for 4 minutes or more
4	-	can be maintained for 3-<4 minutes
3	-	can be maintained for 2-<3 minutes
2	-	can be maintained for 1-<2 minutes
1	-	can be maintained for <1 minute
0	-	unable to perform the test

Stairs Climbing Test

4	-	can climb with no difficulty and no assistance
3	-	can climb with mild difficulty (one railing)
2	-	can climb with moderate difficulty (two railings)
1	-	can climb with severe difficulty (two railings and help)
0	-	unable to climb.

Balance Test on a Balance Board

5	-	can balance for 45 seconds or more
4	-	can balance for 30-<45 seconds
3	-	can balance for 20-<30 seconds
2	-	can balance for 10-<20 seconds
1	-	can balance for <10 second
0	-	unable to balance at all.

Appendix 2

NCHO PU TA ISI OGO NKE IBADAN MAKÀ O GWU GWO AGBA – IKPERE – UKWU MGBU

Nkeji Nke mbu: Gosputa ihe ndiisi ike aika I na – enyocha ihe mnwachaputa ndi a r’iji usoro ndi a:

Etu a si sikebe ike: 4 = esighi ike; 3 = situ ike; 2 = sie ike obere; 1 = siri nno ike; 0 = ekweghi omume

Udi enyemaka: 4 = achoghi enyemaka; 3 = choro akoro ngwa/ngwa olu; 2 = choro enyemaka out onyhe; 1 = choro enyemaka out onye tinyere iji ngwa oluga; 0 – enweghi ike imenwu ya.

	Ebe o na - emerute	Enyemaka
1. Isa ahu niile ma ana a saa ahu.		
2. Ina – agaghari n’ime ulo		
3. Iji azizi di obere zaa ihe		
4. Igaghari m’jio (ebe ala gbagoro agbago) ihe dika nkeji Iri na ise rue iri abuo		
5. Iyi akwa ime ahu		
6. Iba na iputa na ugboala nta		
7. Isa ihe dika isa , akwa n’ebe di ala		
8. I guzo n’oche agada		
9. I guzo n’oche di elu (oche eji eri nri/oche ulo oru)		
10. Iyi akpukpo ukwu/ikechi eriri ya		
11. I guzo n’oche agada		
12. Iji ogologo aziza zaa ihe		
13. Ndi nnoghari/Onodu mgbe nwoke na nwanyi na – enwe mmeke		
14. Igbu ikpere/mmeghari ahu iji gosi ekele		
15. Nri/Nrida mposi ogbara ohuu		
16. Iba nna iputa na nnukwu ugboala		
17. I kwu oto o pekata mpe nkeji iri na ise (iche n’ebe ugboala na – akwusi/iru oru n’ebe ana – esi nri nke ogbara ohuu).		
18. I ji aka suo ahilia/I ji ogu/iru obere oru ubi		
19. Ino ka ndi Alakuba		
20. I rigo ulo elu		
21. Ihuru ala welite ihe n;ime kitchen Cabinet/ igbenajuiheoyi		
22. Igbudo ikpere (dika e si ekpe ekpere)		
23. I no ala n’oche di ala		
24. Iritu ulo elu		
25. Ije mposhi n’olu u mposhi		

Nkeji Abu: Gosiputa ogo ihe isi ike 1 na – enwe n’isoro na onodu ndu ndia di iche iche site n’igbaso usoro a:

- 1 - Mneghari ikpere 10-39⁰
- 0 - Mneghari ikpere < 10⁰

Etu o so gbochika gi: 3- Na eso n’enweghi nsogbu, 2- Na enwe ntakiri nsogbu na iso mee ya, 1-Na enwe nnukwu nsogbu n’iso mee ya, 0-Anaghi eso.

Mnewale nguzo out ukwu

- 5 - imeru rue nkeji ano ma o bu karia
- 4 - imeru rue nkeji 3-<4
- 3 - imeru rue nkeji 2-<3
- 2 - imeru rue nkeji 1-<2
- 1 - imeru rue nkeji <1
- 0 - enweghi ike ime nwale a.

	Ka o si emeta ebe
1. Iru olu na wo oru ma na ulo.	
2. Iga njiem ihe dika ofu hour	
3. Iso jee ogbako dika uka, agbamakwukwo, Ikuputa nwa, Mgbaru/akwamozu,ncheta agbamafo	

Mnewale irigo elu step ulo elu

- 4 - ga – alinwu na – enweghi nhia/enyemaka
- 3 - ga – ejitu nhia ahu rigo (out nkeji step)
- 2 - ge – eji obere nhia ahu rigo (nkeji abuo)
- 1 - ga – ejinoo nnukwu nhia anu ria (abuo site n’inye aka)
- 0 - agaghi arinwu ma oli.

Nkehi Ato: Mnewale Mgbasi ike Mnewale 250m agamije

Mnewale 250m agamije

- 5 - Iganwu ije ihe ruru 250m ma o bu karia n’otu oge
- 4 - Iganwu ije ihe ruru 200-<250m n’otu oge
- 3 - Iganwu ije ihe ruru 150-<200m n’otu oge
- 2 - Iganwu ije ihe ruru 100-<150m n’otu oge
- 1 - Iganwu ije ihe ruru 50-<100m n’otu oge
- 0 - Iganwu ije ihe ruru <50m n’otu oge

Mnewale Balance n’elu Board Balance

- 5 - ga –abalansili rue timkom timkom iri anon a ise ma o bu karia
- 4 - ga -- abalansili rue timkom timkom 30-<45
- 3 - ga – abalansili rue timkom timkom 20-<30
- 2 - ga – abalansili rue timkom timkom 10-<20
- 1 - ga – abalansili rue timkom timkom <10
- 0 - Agaghi abalansili ma oli

Mnewale Isu ikpere

- 4 - Mneghari ikpere ≥100⁰
- 3 - Mneghari ikpere 70-99⁰
- 2 - Mneghari ikpere 40-69⁰

Appendix 3

IGBO IKHOAM

NCHO PU TA ISI OGO NKE IBADAN MAKA O GWU GWO AGBA – IKPERE – UKWU MGBU

Nkeji Nke mbu: Gosputa ihe ndiisi ike aika I na – enyocha ihe mnwachaputa ndi a r'iji usoro ndi a:

Etu a si sikebe ike: 4 = esighi ike; 3 = situ ike; 2 = sie ike obere; 1 = siri nno ike; 0 = ekweghi omume

Udi enyemaka: 4 = achoghi enyemaka; 3 = choro akoro ngwa/ngwa olu; 2 = choro enyemaka out onyhe; 1 = choro enyemaka out onye tinyere iji ngwa oluga; 0 – enweghi ike imenwu ya.

	Ebe o na - emerute	Enyemaka
1. Isa ahu niile ma ana a saa ahu.		
2. Ina – agaghari n'ime ulo		
3. Iji azizi di nkpumpu zaa ihe		
4. Igaghari m'jio (ebe ala gbagoro agbago) ihe dika nkeji Iri na ise rue iri abuo		
5. Iyi akwa ime ahu		
6. Iba na iputa na ugboala nta		
7. Isa ihe dika isa , akwa n'ebe di ala		
8. I guzo n'оче agada		
9. I guzo n'оче di elu (оче eji eri nri/оче ulo oru)		
10. Iyi akpukpo ukwu/ikechi eriri ya		
11. I guzo n'оче agada		
12. Iji ogologo aziza zaa ihe		
13. Ndi nnoghari/Onodu mgbe nwoke na nwanyi na – enwe mmeko		
14. Igbu ikpere/mmeghari ahu iji gosi ekele		
15. Nrigo/Nrida mposi ogbara ohuu		
16. Iba nna iputa na nnukwu ugboala		
17. I kwu oto o pekata mpe nkeji iri na ise (iche n'ebe ugboala na – akwusi/iru oru n'ebe ana – esi nri nke ogbara ohuu).		
18. I ji aka suo ahilia/I ji ogu/iru obere oru ubi		
19. Ino ka ndi Alakuba		
20. I rigo ulo elu		
21. Ihuru ala welite ihe n;ime kitchen Cabinet/ igbenajuiheoyi		
22. Igbudo ikpere (dika e si ekpe ekpere)		
23. I no ala n'оче di ala		
24. Iritu ulo elu		
25. Ije mposhi n'olu u mposhi		

Nkeji Abu: Gosiputa ogo ihe isi ike 1 na – enwe n'isoro na onodu ndu ndia di iche iche site n'igbaso usoro a:

1 - Mneghari ikpere 10-39⁰
0 - Mneghari ikpere < 10⁰

Etu o so gbochika gi: 3- Na eso n'enweghi nsogbu, 2- Na enwe ntakiri nsogbu na iso mee ya, 1-Na enwe nmukwu nsogbu n'iso mee ya, 0-Anaghi eso.

Mnewale nguzo out ukwu
5 - imeru rue nkeji ano ma o bu karia
4 - imeru rue nkeji 3-<4
3 - imeru rue nkeji 2-<3
2 - imeru rue nkeji 1-<2
1 - imeru rue nkeji <1
0 - enweghi ike ime nwale a.

	Ka o si emeta ebe
1. Iru olu na wo oru ma na ulo.	
2. Iga njiem ihe dika ofu hour	
3. Iso jee ogbako dika uka, agbamakwukwo, Ikuputa nwa, Mgbaru/akwamozu,ncheta agbamafo	

Mnewale irigo elu step ulo elu
4 - ga – alinwu na – enweghi nhia/enyemaka
3 - ga – ejitu nhia ahu rigo (out nkeji step)
2 - ge – eji obere nhia ahu rigo (nkeji abuo)
1 - ga – ejinoo nnukwu nhia anu ria (abuo site n'innye aka)
0 - agaghi arinwu ma oli.

Nkehi Ato: Mnwale Mgbasi ike Mnewale 250m agamije

Mnewale Balance n'elu Board Balance
5 - ga –anoma anoma rue timkom timkom iri anon a ise ma o bu karia
4 - ga --anoma anoma rue timkom timkom 30-<45
3 - ga – anoma anoma rue timkom timkom 20-<30
2 - ga – anoma anoma rue timkom timkom 10-<20
1 - ga – anoma anoma rue timkom timkom <10
0 - Agaghi anoma anoma

Mnewale 250m agamije

5 - Iganwu ije ihe ruru 250m ma o bu karia n'otu oge
4 - Iganwu ije ihe ruru 200-<250m n'otu oge
3 - Iganwu ije ihe ruru 150-<200m n'otu oge
2 - Iganwu ije ihe ruru 100-<150m n'otu oge
1 - Iganwu ije ihe ruru 50-<100m n'otu oge
0 - Iganwu ije ihe ruru <50m n'otu oge

Mnewale Isu ikpere

4 - Mneghari ikpere ≥100⁰
3 - Mneghari ikpere 70-99⁰
2 - Mneghari ikpere 40-69⁰