Italian Version of the Risk Assessment and Prediction Tool: Properties and Usefulness of a Decision-Making Tool for Subjects' Discharge after Total Hip and Knee Arthroplasty

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Abstract: *Background*: Growing attention is being given to standardized outcome measures to improve interventions for total hip arthroplasty (THA) and total knee arthroplasty (TKA). We culturally adapt and validate the Italian version of the Risk Assessment and Prediction Tool (RAPT-I) to allow its predictive use after THA and TKA.

Methods: The RAPT-I was adapted by forward–backward translation, a final review by an expert committee and a test of the pre-final version to establish its correspondence with the original version. The psychometric testing included test–retest reliability (intraclass correlation coefficient, ICC). The RAPT score was used to predict the subjects' destination (<6: rehabilitation unit; 6–9: additional intervention before discharging home; or >9: discharge directly at home) by comparing the actual discharge destination with the predicted destination. The predictive effects of RAPT items on the discharge destination were further described by a logistic regression model (repeated leave-one-out bootstrap procedure).

Results: The questionnaire was administered to 78 subjects with THA and 70 subjects with TKA and proven to be acceptable. The questionnaire showed excellent test–retest reliability (ICC = 0.839; with 95% confidence interval (CI) of 0.725–0.934 for THA; ICC = 0.973, with 95% CI of 0.930–0.997 for TKA). The RAPT-I overall predictive validity was 87.2%, and the discharge destination was directly related to living condition (odds ratio (OR) = 2.530), mobility (OR = 2.626) and age (OR = 1.332) and inversely related to gait aids (OR = 0.623) and gender (OR = 0.474).

Conclusions: The RAPT-I was successfully adapted into Italian and proven to exhibit satisfactory properties, including predictive validity in determining discharge destination.

Keywords: RAPT, cross-cultural adaptation, predictive validity, logistic regression, repeated leave-one-out bootstrap.

INTRODUCTION

Background

Orthopaedic surgery has rapidly developed over the last 20–30 years; total joint arthroplasties are the frequently performed elective surgical procedures, with more than 66,000 total hip arthroplasties (THAs) and 63,000 total knee arthroplasties (TKAs) estimated annually in Italy [1].

Although THAs and TKAs are considered effective treatments for the hip and knee osteoarthritis, respectively [2,3], uncertainty still exists towards subjects who can be discharged at home safely or those who require additional inpatient rehabilitation after short orthopaedic stays following arthroplasties. Therefore, an early planning for discharge is crucial in improving the post-surgery management and cost containment in health care [2,4].

Based on these considerations, in 2003, a method that can identify the risk of needing extended inpatient rehabilitation after arthroplasty was firstly published [5]. This six-item tool was named Risk Assessment and Prediction Tool (RAPT), and according to its variables (age, sex, walking perimeter, gait aids for walking, home help and living condition), it generates a score from 1 to 12, with lower estimates indicative of higher risks for inpatient rehabilitation after total joint arthroplasties. The tool was developed and validated using data from an Australian cohort of 650 subjects undergoing total joint arthroplasties; the cohort was split into two groups; data from the first 520 subjects were used to develop the tool, and those from the next 130 subjects were used for the validation, providing an overall predictive accuracy of about 75% [5]. In a later

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study conducted in 3213 American people, the RAPT accurately predicted discharge disposition for high- and low-risk subjects; the authors also suggested its role in identifying intermediate-risk subjects to implement the targeted interventions to assist discharges [6]. Recently, the RAPT was delivered to 535 American subjects undergoing primary unilateral total joint arthroplasty, confirming its capability to predict discharge expectations and to favour care coordination and resources [7].

Objectives

No cross-cultural adaptation study nor a validation study of the RAPT based on classical test theory was performed in an Italian population [8]. Therefore, this study aimed to cross-cultural adapt the RAPT into the Italian language, to analyse its main properties (feasibility, floor/ceiling effects, test–rest reliability and content and construct validity) and to investigate its clinical usefulness (predictive validity) in an adequate sample of subjects undergoing total joint arthroplasties for their hip and knee osteoarthritis.

METHODS

Study Design

The RAPT was firstly adapted into Italian language by two professional Italian translators experienced in the patiet-reported outcomes (PRO) field. Subsequently, by means of a cross-sectional study, the RAPT-I (Italian version) was administered to subjects who underwent THA and TKA in order to test its clinometric properties as well as its predicting utility. This cross-sectional study was approved by the local ethical committee of the research hospital where it was performed and conducted in accordance with ethical and humane principles of research (project number: 1749; date of approval: 11/04/2017).

Setting

The study involved subjects attending the Orthopaedics Unit at the Institute of Care and Research Humanitas in Rozzano (Milan, Italy) between April and July 2017.

Participants

The inclusion criteria were subjects waiting for a primary uncemented THA/TKA (as a result of primary osteoarthritis), adult age and fluency in Italian; the exclusion criteria were cognitive impairment (i.e. Mini Mental State Examination <24) and acute neurological, heart and lung co-morbidities. The subjects with a previous lower limb surgery, infection, fracture, osteonecrosis or malignancy, and systemic or neuromuscular diseases were also excluded.

Those satisfying the inclusion criteria were requested to sign a written informed consent. Once the patients had given their approval to participate the study, the demographic and clinical characteristics were recorded by the research assistants.

Cross-Cultural Adaptation

RAPT was adapted in accordance with the protocol issued by the American Association of Orthopaedic Surgeon Outcomes Committee [9]. The principles of good practice for the translation and cultural adaptation process for the PRO measures based on the report of the International Society for Pharmacoeconomics and Outcomes Research task force were also considered [10].

Step 1: Translation into Italian

The English items were translated into Italian with the aim of retaining the concepts of the original version while using culturally and clinically fitting expressions. Two translations were made independently by two professional Italian translators experienced in the PRO field. The translators were given a clear explanation of the concepts in the RAPT to capture the conceptual meaning of the items. Keeping the language colloquial and compatible with a reading age of 12 years, the discrepancies between the translators were resolved by means of reconciliation; Step 1 ended when a common adaptation was agreed upon.

Step 2: Back-Translation into English

Two bilingual translators whose mother tongue was English independently back-translated to the initial translation. The principal investigator (MM) reviewed these translations and, with the help of the back-translators, ensured that the Italian version reflected the same item content as the original version and was conceptually equivalent.

Step 3: Expert Committee

To achieve the harmonisation of the adaptation process, the translations were submitted to a bilingual committee of clinicians, methodologists and the translators, who were chaired by the principal investigator. To identify any discrepancies or mistakes,

the committee explored the semantic, idiomatic and conceptual equivalence of the items and answers. This phase ended when a prefinal version was agreed upon.

Step 4: Test of the Prefinal Version

The prefinal version was tested to assess the level of comprehensibility and cognitive equivalence of the translation, to highlight any items that may be inappropriate at a conceptual level and to identify any other issues that cause confusion. The cognitive interviews were conducted by a trained psychologist by administering the RAPT to 10 subjects with THA/TKA. The principal investigator and the expert committee reviewed the results from the cognitive debriefing to identify any modification necessary for the improvement of the Italian version of RAPT.

Study Size

The sample size was based on the 'rule of 10' patients per item [11].

Variables and Measurement

To compare the results to those obtained in [5], we decided to follow their approach, which consists of studying jointly the THA and TKA patients. Consequently, the two datasets concerning THA and TKA were merged into a single dataset, which was used to perform the analysis. By comparing the actual discharge destination with the predicted destination, the RAPT score was used to predict the patients' destination based on the original developers [5]: <6: rehabilitation unit; 6–9: additional intervention before discharging home; or >9: discharging directly at home.

NRS

Numerical Rating Scale (NRS) is an 11-point rating scale with scores ranging from 0 (no pain at all) to 10 (the worst imaginable pain) [12]. The patients were asked to evaluate the intensity of their pain in the last week of previous assessment.

WOMAC

Western Ontario and McMaster Universities (WOMAC) is a multidimensional scale of 24 items grouped into three subscales: physical function (17 items), pain (5 items) and stiffness (2 items). We used the 3.1 Likert version that allows for five response levels for each item (score: 0–4) representing different degrees of intensity (none, mild, moderate, severe or extreme). The data for each subscale were standardised to a range of 0–100, where 0 is the best, and 100 is the poorest status [13].

KOOS

Knee Injury and Osteoarthritis Outcome Score (KOOS) includes five subscales: pain, symptoms, activities of daily living, sports and recreation and knee-related QoL. A five-point Likert scale ranging from 0 (no problems) to 4 (extreme problems) is used to score each item, and the raw scores of each subscale are separately transformed into a 0–100 scale, with 0 indicating no problems and 100 indicating the worst problems [14].

TSK

Tampa Scale of Kinesiophobia (TSK) assesses the pain beliefs and pain-related fear of movement in subjects with musculoskeletal complaints and consists of a 13-item self-report questionnaire in which each question is scored using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree); the total score is calculated by adding the scores of the individual items and ranges from 17 to 52 [15].

SF-36

Quality of Life (QoL) was assessed using the self-reported Short-Form Health Survey (SF-36). The eight domain scores (physical functioning, physical role, physical pain, general health, vitality, social activities, emotional role and mental health) were calculated on the basis of the Italian User's Manual, with 0 representing the worst perceived QoL and 100 the best perceived QoL [16,17].

Statistical Methods: Scale Properties

In order to assess basic psychometric properties of the newly developed tool we decided to evaluate feasibility, floor/ceiling effects, reliability, content and construct validity as detailed below.

Feasibility. The time needed to answer the questionnaire was recorded. The subjects were inquired about any problems they encountered, and the data were checked for missing or multiple responses. *Floor/ceiling effects*. The descriptive statistics were calculated to identify the floor/ceiling effects, which were considered to be present when >15% of the subjects obtained the lowest or highest possible scores [11]. *Reliability*. The test–retest reliability (intraclass correlation coefficient: ICC 2,1, with good and excellent reliability indicated by values of 0.70–0.85 and >0.85,

respectively) [11] was investigated; the test–retest interval was 10 days. In addition to the ICC, a paired t-test was used to compare the test–retest sessions to ensure the absence of any systematic error. *Content validity.* For the purposes of content validation, the subjects were asked to report their perceptions of the aim of the measurement (Question: '*Do you think the aim of this questionnaire is investigating the need for extended care after surgery?*'), the target population ('*Do you think the items described here may be related to your status?*'), relevance ('*Do you think these items are relevant to evaluating the need for extended care after surgery?*') and completeness ('*Do you think that the items comprehensively reflect the need for extended care after surgery?*'). The hypotheses were considered acceptable if the percentage of affirmative answers was >90% [11]. *Construct validity.* For the construct validation [11], we hypothesised that the *a priori* RAPT would achieve moderate-to-low correlations with the following: a) pain intensity, 0–10 numerical rating scale (NRS) [12]; b) disability, to the Italian version of the WOMAC osteoarthritis index for the subjects undergoing THA [13] and the Italian version of the KOOS for the subjects undergoing TKA [14]; c) fear of movement, the Italian version of the TSK [15]; d) QoL, the Italian version of the Short-Form Health Survey (SF-36) [16,17]. Pearson's correlations were interpreted as follows: $r<0.30$ as low; $0.30<r<0.60$ as moderate; $r>0.60$ as high. The construct validity was considered good if >75% of the hypotheses were confirmed.

Statistical Methods: Predictive Validity

In order to reach the aim of the predictive validity we decided to perform a logistic regression since it is one of the main statistical models adopted in literature when the dependent variable is binary. Concerning the link function, logit was adopted. Specifically, this model was employed to describe the predictive effects of the RAPT items on the discharge destination. It was trained using all the available data to obtain the best model possible and tested through the repeated leave-one-out bootstrap (RLOOB) procedure, which is a specific statistical method that evaluates a model with the same data used to train it, limiting the bias and variance of the estimate [18]; it also enhances the representation of the original data distribution by enlarging the size of the bootstrap sample [18]. To correctly interpret the results of the model, we highlight that the RAPT scores of ordinal factors, age and gait aids, are presented in a reverse scale, that is, they assume a zero value for the highest modalities.

The analyses were made using R software, version 3.4.4 [19].

Bias

The patients included were randomly selected from a larger set of subjects undergoing THA and TKA; they did not know the object of the study before enrollment and none of them refused to get involved, avoiding selection bias; patients were patients and care providers were blinded to the intervention, preventing from performance bias. Further, adequacy of blinding was achieved when assessing general clinical characteristics as well as patient-reported outcomes as the subject were blinded to treatment during all examination phases, thus avoiding detection bias. As for the prediction study, training and test groups were formed randomly, achieving similar demographic and clinical factors, and preventing from selection bias; furthermore, these groups were indistinguishable for both patients and care providers, avoiding performance bias.

RESULTS

Participants and Descriptive Data

The study involved 78 subjects with THA and 70 subjects with TKA. A total of 39 females (50%) underwent THA, and 44 females underwent TKA (63%) with a mean age of 65.09 ± 9.76 years (age range: 50–87 years) for the first group and a mean age of 68.93 ± 7.89 years (age range: 49–85 years) for the second group. The median duration of complaints before intervention was 14.79 months (range: 2–72 months) for THA and 21.61 months (range: 3–120 months) for TKA. The mean body mass index was 27.49 ± 4.86 for the THA group and 29.80 ± 5.00 for the TKA group. Table **1** shows the additional socio-demographic characteristics.

Main Results: Cross-Cultural Adaptation

The translation procedure lasted for one month to reach a culturally adapted version, and all the items were easily forward- and back-translated. No difficulties were evidenced during the review of the back translations. The correctness of the process, the content of the items and the concepts expressed were confirmed by the experts. The cognitive interviews confirmed the comprehensibility and cognitive equivalence of the translation. No other issues causing confusion were pointed out. Finally, the principal

investigator and the expert committee confirmed the work performed.

Table 1: General Characteristics of Subjects with Total Hip Arthroplasty (THA, n=78) and Total Knee Arthroplasty (TKA, n=70)

Variable	THA		TKA	
	N.	%	N.	%
Gender				
Female	39	50	44	63
Male	39	50	26	37
Marital status				
Unmarried	25	32	16	23
Married	52	68	54	77
Employment				
Unemployed	4	5	4	6
Employee	14	18	7	10
Self-employed	18	23	2	3
Retired	34	44	51	73
Housewife	8	10	6	8,6
Education				
Elementary school	16	21	25	36
Middleschool	20	26	28	40
Upper school	27	35	13	19
University	14	18	4	5,7
Smoking				
Yes	14	18	15	21
No	64	82	55	79
Use of drugs				
Antidepressants	5	6	7	10
Analgesics	34	44	32	46
Muscle relaxants	1	1	0	0
NSAIDs	5	6	2	3
None	42	54	34	49
Comorbidities (principal)				
Hypertension	15	19	13	19
Non-insulin dependent diabetes mellitus	3	4	3	4
Heart disease	3	4	2	3
Gastro-enteric disease	5	6	11	16
Respiratory disease	3	4	5	7
Kidney disease	2	3	2	3
Other msk disease	6	8	5	7
None	47	60	36	51

NSAIDs, Non-Steroidal Anti Inflammatory Drugs; msk, musculoskeletal; the variables 'Use of drugs' and 'Comorbidities' can sum up over 100 because the patients could indicate more than one option.

The RAPT-I (Italian version) is reproduced in the Appendix.

Outcome Data: Scale Properties

Acceptability. All the questions were well accepted. The questionnaire was completed in 2.29 ± 2.13 min for the THA group and 1.91 ± 1.47 min for the TKA group. No missing responses nor multiple answers were detected. No problems were observed in the comprehension. *Reliability*. The test–retest reliability was measured in all subjects and yielded excellent values (ICC = 0.839 with 95% confidence interval (CI) 0.725–0.934 for the THA group; ICC = 0.973 with 95% CI 0.930–0.997 for the TKA group). *Distribution and floor/ceiling effects.* The adapted RAPT caused no significant floor/ceiling effects on both populations (see Table **2**). *Content validity.* The content of the items was considered valid for the evaluation of discharge destination. All the questions were judged to be relevant to investigate the discharge destination in the populations considered. The concepts explored were defined, and the needs for discharge destination that might be influenced by THA and TKA were described. *Construct validity*. A good construct validity was observed in both populations. Regarding the THA population, negative correlations were observed between the RAPT-I and NRS (r = -0.336) and between the RAPT-I and WOMAC (r = -0.385), whereas weak positive correlations were identified between the RAPT-I and SF-36 domains (r = 0.072–0.324). A weak negative correlation (r = -0.157) was observed between RAPT-I and TSK. Regarding the TKA population, the RAPT-I and NRS showed no correlation (r = 0.033), whereas weak negative correlations were observed between the RAPT-I and KOOS subscales (r ranging from -0.142 to -0.302) and between RAPT-I and TSK (r = -0.112). Weak correlations were identified between the RAPT-I and SF-36 domains (r from -0.091 to 0.375). Tables **3** and **4** show all the correlations.

Main Results: Predictive Validity

The RAPT-I predicted the adequate discharge destination with an overall accuracy of 87.2% (sensitivity = 96.9%, specificity = 25.0%), with larger scores (i.e. >9) predicting higher accuracy. Of the 19 subjects whose destination was incorrectly predicted through the scoring system, 15 were expected to return home but were discharged to a rehabilitation unit, and 4 were expected to enter a rehabilitation facility but went home (see Table **5** for full results).

Table 2: Descriptive Statistics of the RAPT Items and Actual Discharge Destination, Concerning the whole Sample, THA and TKA

Variable	Whole sample (n=148)	THA (n=78)	TKA (n=70)
Female gender	56.1%	50.0%	62.9%
Age group 50-65 years 66-75 years >75 years	 35.8% 45.9% 18.2%	 47.4% 35.9% 16.7%	 22.9% 57.1% 20.0%
Caregiver on return home: Yes	86.5%	88.5%	84.3%
Community supports: None or one per week	98.6%	98.7%	98.6%
Preoperative mobility Housebound 1–2 blocks >2 blocks	 5.4% 23.0% 71.6%	 7.7% 21.8% 70.5%	 2.9% 24.3% 72.9%
Gait aid None Single point stick Crutches/frame	 73.6% 17.6% 8.8%	 63.4% 24.4% 10.2%	 82.9% 10.0% 7.1%
Actual discharge destination Home Rehabilitation Facility	 86.5% 13.5%	 87.2% 12.8%	 85.7% 14.3%

RAPT, Risk Assessment and Prediction Tool; THA, Total Hip Arthroplasty; TKA, Total Knee Arthroplasty.

Table 3: Construct Validity. Pearson's Correlations between the RAPT and WOMAC, NRS and SF-36. in Subjects with THA

Outcome measures	RAPT	p-value
WOMAC	-0.385	<0.001***
WOMAC pain	-0.394	<0.001***
WOMAC stiffness	-0.184	0.107
WOMAC Activities of Daily Living	-0.372	0.001**
NRS	-0.336	0.003**
SF-36 Physical Function	0.273	0.016*
SF-36 Physical Role	0.072	0.532
SF-36 Bodily Pain	0.324	0.004**
SF-36 General health	0.127	0.270
SF-36 Vitality	0.220	0.053
SF-36 Social function	0.073	0.523
SF-36 Emotional Role	0.168	0.141
SF-36 Mental Health	0.120	0.295
TSK	-0.157	0.169

*** p<0.001; ** p<0.01; * p<0.05.

RAPT, Risk Assessment and Prediction Tool; NRS, numerical rating scale; WOMAC, Western Ontario and McMaster University index; SF-36, Short Form Health Survey 36 items; THA, Total Hip Arthroplasty; TSK, Tampa Scale of Kinesiophobia.

The RLOOB was performed to draw 100 bootstrap learning sets and set their size five times the size of the original data, providing an overall accuracy rate of 86.6% (sensitivity = 97.8%, specificity = 14.5%). The model excluded the 'Community supports' item, as a score of 1 (none or one per week) was constantly reported by all the subjects. Therefore, only five out of the six items were entered into the equation. The discharge destination was directly related to living condition (odds ratio (OR)=2.530), mobility (OR=2.626)

Table 4: Construct Validity. Pearson's Correlations between the RAPT and KOOS, NRS and SF-36. in Subjects with TKA

Outcome measures	RAPT	p-value
KOOS Symptoms	-0.142	0.242
KOOS Pain	-0.224	0.062
KOOS ADL	-0.256	0.033*
KOOS Sport/Rec	-0.151	0.211
KOOS QoL	-0.302	0.011*
NRS	0.033	0.787
SF-36 Physical Function	0.375	0.001**
SF-36 Physical Role	0.211	0.080
SF-36 Bodily Pain	0.288	0.016*
SF-36 General health	0.133	0.272
SF-36 Vitality	0.320	0.007**
SF-36 Social function	0.325	0.006**
SF-36 Emotional Role	-0.091	0.452
SF-36 Mental Health	0.186	0.122
TSK	-0.112	0.357

*** p<0.001; ** p<0.01; * p<0.05.
RAPT, Risk Assessment and Prediction Tool; NRS, numerical rating scale; KOOS, Knee injury and Osteoarthritis Outcome Scale; SF-36, Short Form Health Survey 36 items; TKA, Total Knee Arthroplasty; TSK, Tampa Scale of Kinesiophobia.

Table 5: Predicted and Actual Discharge Destination

Predicted destination	Actual destination (hip n, knee n)	
	Home	Rehabilitation Facility
<6	4* (2,2)	5 (1,4)
6-9	36 (21,15)	14* (8,6)
>9	88 (45,43)	1* (1,0)

*means incorrect prediction.

Table 6: Predictive Effects of the RAPT Items on Discharge Destination

	Odds Ratios	95% CI Lower	95% CI Upper	P-value
Age	1.332	0.607	2.887	0.466
Gender	0.474	0.142	1.524	0.211
Mobility	2.626	0.923	7.929	0.076
Gait aid	0.623	0.247	1.472	0.295
Care giver	2.530	1.676	4.003	<0.001

RAPT, Risk Assessment and Prediction Tool.

and age (OR=1.332) and inversely related to gait aid (OR=0.623) and gender (OR=0.474) (see Table **6** for full estimates).

DISCUSSION

Key Results

This study described the cross-cultural adaptation, the analyses of main properties and the clinical usefulness of the RAPT in Italian subjects who underwent THA and TKA. The Italian RAPT confirmed the three levels of risk for hospital discharge, as originally stated in [5].

Interpretation

The process of cross-cultural adaptation guaranteed that the meanings of the original items were adequately captured, and the results indicated that development of the Italian version of RAPT was successful and followed internationally recommended guidelines. The

experts played an important role during the re-evaluation of the cross-cultural adaptation, and the on-field text confirmed the comprehensibility of the translated items, thus leading to a valid measure of another culture's conception of health, allowing data comparability and cross-national studies.

The test–retest reliability was indicated by the highly significant correlation between the results obtained on days 1 and 10. The RAPT caused no serious floor/ceiling effects, demonstrating its capability to assess wide ranges of disease severity. The construct validity was analysed by comparing the RAPT with the measures of pain, disability and QoL. Although the direction of the correlations was consistently correct, very weak associations were observed between the RAPT and the other tools as they measure different conceptual constructs. However, similar psychometric estimates, as described above, were not calculated by the original developers or by other researchers who adapted the RAPT, and comparisons cannot be conducted [5,20–22].

The Italian RAPT predicted with almost 99% accuracy those at the lowest clinical risk, providing clinicians and managers with wide ranges of certainty to safe discharges and cost reductions due to unnecessary in-hospital stays. However, the accuracy related to the groups at high and medium risk of discharge showed more uncertainty in clinical decision-making (55% and 72%, respectively), probably suggesting more discharges at home along with proactive interventions when subjects fall in the latter group and a lengthier in-hospital stay to those who fall in the former group [23].

The absence of a caregiver, the necessity to remain housebound for most of the time during the day and old age were determined as the most important criteria among the items included in this adapted version of RAPT in determining discharge destination to a rehabilitation unit. These results are in accordance with the previous findings, suggesting the importance of delaying discharge at home when physical and social circumstances are not fully worked out [24–27]. Interestingly, the availability of aids for walking was not considered as relevant as the previous factors, probably because their presence contributes nothing to the factual increase of perceived safety. In line with previous findings, gender was also not identified as a major factor once subjects were asked for discharge destination, possibly suggesting the occurrence of similar welfare and organisational difficulties in both males and females [24–27].

LIMITATIONS

This study features several limitations that need to be discussed. Firstly, this research was designed cross-sectionally, and any significant correlations should not be confused with causal effects. Secondly, the relationships between self-reported beliefs and physical tests were not considered, because only self-administered measures were used. Thirdly, the content validity was based on the questions that might have prevented neutral responses, partially limiting the soundness of our results; the use of open questions in the future is suggested. Fourthly, our research was restricted to THA and TKA, and whether our findings can be extended to other surgical complaints remains uncertain. Fifthly, the Italian RAPT was tested at a single acute care hospital associated with an on-site rehabilitation facility.

GENERALISABILITY

Despite more exploration is still recommended, the questionnaire is highly acceptable, easily understood, can be self-administered and requires about 2 min to complete. With regards to the populations investigated, the questionnaire is hence applicable in everyday clinical practice.

CONCLUSIONS

The Italian version of the RAPT was satisfactorily adapted and showed good psychometric properties. This version of RAPT can therefore be recommended for clinical and management purposes, as it is expected to help healthcare professionals in individuating the adequate rehabilitative settings of the subjects undergoing THA and TKA. The research on different contexts and populations is advised.

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