ANNEE 2017

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VITESSE DE MARCHE : SENSIBILITE AU CHANGEMENT APRES UN PROGRAMME DE PRISE EN CHARGE PLURIDISCIPLINAIRE DES LOMBALGIES CHRONIQUES COMMUNES

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à l'UFR des Sciences de Santé de Dijon
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par Delphine Trampé

Née le 22 mars 1988

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SERMENT D'HIPPOCRATE

"Au moment d'être admise à exercer la médecine, je promets et je jure d'être fidèle aux lois de l'honneur et de la probité.

Mon premier souci sera de rétablir, de préserver ou de promouvoir la santé dans tous ses éléments, physiques et mentaux, individuels et sociaux.

Je respecterai toutes les personnes, leur autonomie et leur volonté, sans aucune discrimination selon leur état ou leurs convictions.

J'interviendrai pour les protéger si elles sont affaiblies, vulnérables ou menacées dans leur intégrité ou leur dignité.

Même sous la contrainte, je ne ferai pas usage de mes connaissances contre les lois de l'humanité.

J'informerai les patients des décisions envisagées, de leurs raisons et de leurs conséquences.

Je ne tromperai jamais leur confiance et n'exploiterai pas le pouvoir hérité des circonstances pour forcer les consciences.

Je donnerai mes soins à l'indigent et à quiconque me les demandera.

Je ne me laisserai pas influencer par la soif du gain ou la recherche de la gloire.

Admise dans l'intimité des personnes, je tairai les secrets qui me seront confiés. Reçue à l'intérieur des maisons, je respecterai les secrets des foyers et ma conduite ne servira pas à corrompre les mœurs.

Je ferai tout pour soulager les souffrances. Je ne prolongerai pas abusivement les agonies. Je ne provoquerai jamais la mort délibérément.

Je préserverai l'indépendance nécessaire à l'accomplissement de ma mission. Je n'entreprendrai rien qui dépasse mes compétences. Je les entretiendrai et les perfectionnerai pour assurer au mieux les services qui me seront demandés.

J'apporterai mon aide à mes confrères ainsi qu'à leurs familles dans l'adversité.

Que les hommes et mes confrères m'accordent leur estime si je suis fidèle à mes promesses; que je sois déshonorée et méprisée si j'y manque."

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INTRODUCTION

The treatment options for non-specific chronic low back pain (NLBP) are very diverse: pharmacotherapy, physiotherapy, orthotic trunk, cognitive behavioral therapy, surgery, rehabilitation, multi-disciplinary management programs. Furthermore, a number of "alternative" medicines (osteopathy, chiropractic, homeopathy...) are claiming a place in this therapeutic armamentarium. Recommendations for indications in this overabundance of therapeutic possibilities are lacking and consequently NLBP persists as a major medico-economic burden, and its incidence is increasing. The low level of evidence regarding the choice among the multiple available treatments for NLBP results, at least partially, from the lack of validated diagnostic tools able to guide treatment and to evaluate its efficiency [1]. Indeed, the assessment of NLBP severity is essentially declarative (patients‘ perceptions of their condition). Physicians rely on self-report evaluations of the intensity of pain (e.g. by a visual analogue scale) [2] and on the quantification of its functional impact by specific scores. For instance, the results of the Oswestry Low Back Pain Disability Questionnaire [3] have long been known to be insufficient as an isolated parameter [4,5], particularly because of a very large floor effect, and despite good reliability [6]. The standard clinical examination (e.g. movement testing and palpation) is not decisive either, because of its poor psychometric qualities [7]. Furthermore, diagnostic imaging does not correlate well with clinical parameters (patients’ symptoms and disability) [8,9]. Ultimately, all of these conventional parameters taken alone are inconsistent as outcome measures for clinical trials dedicated to patients with NLBP. This situation has led to the development of COS (Core Outcome Sets: minimum set of outcome domains recommended in clinical trials) as an alternative [10]. In particular, COS promote the validation of functional outcome measures applicable in routine clinical practice.

In this context, decreased walking tolerance is the problem most frequently reported by subjects with chronic low back pain [11,12].

A slower walking speed in particular has long been observed in patients with NLBP and analyzed as locomotor behavior attempting to reduce pain [13,14]. Even though walking tests are extremely useful to analyze these gait disorders, few studies have shown that they could be applied to evaluate the functional effects of training in NLBP [15,16].

The main objective of this study in subjects with NLBP was to assess the contribution of two fixed-distance walking tests, one at a comfortable speed (the 400m comfortable walk test: 400mCWT) and the other at a brisk speed (the 200m fast-walk test: 200mFWT), to the quantification of functional changes as a result of a multimodal management program.

This assessment strategy, which explores two levels of effort intensity, has proved to be feasible, well-tolerated and reliable in patients with cardiovascular disability [17]. Data from such tests may thus help clarify recommendations concerning functional explorations during cardiac rehabilitation [18]. The authors have chosen to propose procedures favoring fixed-distance rather than fixed-duration walking tests because of the heterogeneity and ambiguity concerning the key parameter in the latter, namely walking speed. This choice is also based on the finding that spatial criteria are more effective than time references for planning motor activity [19]. Carrying out the walk tests at both a comfortable and fast speed was justified by their complementarity to assess motor capacity [20].

METHODS

This is a secondary analysis cohort from a study investigating outcomes in outpatients with NLBP treated using a multimodal program in a rehabilitation center of a university hospital from January 2014 to June2016.

Participants were included without distinction of sex, if they were aged between 18 and 65 years, referred to a multi-disciplinary rehabilitation program for NLBP diagnosed for at least 6 months and had completed the rehabilitation program. Subjects were excluded if they presented any associated disease other than NLPB that limited walking capacity (cardiovascular, respiratory, neurological, orthopedic, metabolic diseases) or a significant cognitive disorder that hampered participation in the study. The protocol was approved by the institutional ethics committee (Participants Protection Committee, Dijon Est I) and all patients provided informed consent before participation in the study. This was a study published in Clinical Trials Registration (reference NCT03097263).

Patients took part in a multi-disciplinary management program, as outpatients, from 6 to 7h per day, 5 days a week over 4 weeks. The main components of the program were:

- Tailored global exercise training on several ergometers (treadmill, ergocycles…). The intensity of the effort was personalized according to the result of an initial treadmill stress test with a target heart rate (HR) (using a HR monitor). The Karvonen formula was used to calculate the level of exercise for each patient: training HR = rest HR + 80% (HR max – rest HR),
- Strengthening exercises (abdominal and back muscles), stretching exercises (lower limbs), pool exercises,
- Occupational therapy,

- Motivational interviews to enhance the motivation of subjects to engage in appropriate behavioral changes, and instruction in self-coping skills,
- Nutritional counseling and management of the associated risk factors (smoking, hypertension, dyslipidemia, diabetes, overweight…) by educational therapy,
- Relaxation sessions.

Outcome measures

All of the patients completed a functional assessment at baseline and at the end of the program, except for the maximal stress test (baseline only). The following tests were carried out:

- Walking tests: Two walk tests were conducted on the same flat 50-metre-long indoor walking track. The same two operators monitored all the tests. Following a 15-minute rest phase, the 400mCWT was carried out first and then the 200mFWT, thus limiting the effect of fatigue on the results. The tests were separated by a new 15-minute rest period, or longer if the HR had not returned to the resting value. The monitored parameters were: HR assessed continuously by a HR monitor (Polar FT1 – Polar Electro Oy – 90440 Kempele, Finland), blood pressure in the sitting position on the right arm before and after each test. Pain perception was not assessed during the tests so as not to influence the patients' performance.

- The 400mCWT: Patients were instructed to cover this fixed-distance of 400m at their freely-chosen walking speed (comfortable self-selected speed). Running was forbidden, but stopping and resting was allowed if necessary. No encouragement was given during the test. The test result was expressed in seconds (time in seconds to cover the distance of 400 m).
- The 200mFWT: The instruction was to cover a distance of 200 m as quickly as possible, without running. Standard encouragement was provided at mid-distance. Slowing down and stopping to rest were authorised. The results were also given in absolute values (time in seconds to cover the distance of 200m).

- Maximal exercise test: Before the program a modified Bruce treadmill test was performed with continuous 12-lead ECG monitoring (Marquette, GE Medical Systems, Milwaukee, USA). It was a symptom-limited maximum exercise test. Standard encouragement was provided at the mid-stage of the test. The use of handrail support was forbidden throughout the effort test, except in the case of a loss of balance or at the exhaustion phase, at which time the test was stopped. Blood pressure was measured at the end of every stage of the test, at peak exercise and during recovery. The stress test was terminated at exhaustion. The highest HR measured during the last minute of the treadmill test was used as the reference value for the maximal HR (HRmax).

- The Quebec Back Pain Disability Scale [21]: In this test, disability is evaluated in terms of difficulty experienced while performing simple physical activities relevant to back pain (like «Get out of bed»). This test contains 20 items which have to be scored on a 6-point scale (0 = not difficult at all, 5 = unable to do the task). The total score ranges from 0 to 100 (0 = not disabled, 100 = maximum disability). The French version of the Quebec Back Pain Disability Scale has be shown to be more sensitive to change caused by exercise training than the Dallas Pain Questionnaire [22]. However, as for the Oswestry questionnaire, the psychometric properties of the Quebec scale are a matter of debate [23].

- Two timed tests to assess the endurance of trunk extensor and flexor muscles:

    - The Sorensen test [24] assesses the usual weakness of the extensor muscles of the trunk in subjects with chronic low back pain [25,26]. This test is habitually used to quantify the impact of strengthening exercises on these muscles [27].
    - The Shirado test explores the trunk flexors [28] and is used to show their improvement after muscle strengthening in NLBP [29].

Both muscle tests were carried out according to the authors‘ recommendations.

Statistical analysis

Means, standard deviations and 95% confidence intervals were calculated. Distribution of the parameters was assessed using the Shapiro-Wilks tests. A paired t-test with Bonferroni procedure (or Wilcoxon paired test in case of non-normality) was used to seek potential differences within sessions (time effect). A two-tailed t-test was used to seek potential differences within groups (with or without referred leg pain). A Pearson correlation coefficient was used to test for correlations between parameters. The strength of the correlation was defined as very low=0.15–0.24, low=0.25–0.49, moderate=0.50–0.69, high=0.70–0.89, and very high=0.90–1.00. Receiver operating characteristics (ROC) were used to test the sensitivity and specificity of walking velocity for both walking tests. Statistical analyses were conducted using Statistica (Statsoft, Tulsa, USA) v10.0 and the statistical toolbox for Matlab (the MathWorks, Natick USA). A significance level of $p < 0.05$ was adopted.

RESULTS

A total of 127 patients completed the protocol (see figure 1: Flow diagram, STARD 2015). The baseline characteristics of the participants are reported in table 1.

As was the case in coronary patients, the two walk tests were feasible and well tolerated in subjects with NLBP. In particular, no patients stopped either walk test early due to an increase in low back pain.

Table 2 reports, in absolute values, the overall results of the functional assessments for the walk tests and the muscle tests (before and after the multimodal program) and for the initial stress test. A significant increase was noted for all the repeated parameters, except for the resting HR. Notably, walking speed was increased for both walk tests (0.18 ± 0.15 m.s^{-1} for the 400mCWT and 0.17 ± 0.17 m.s^{-1} for the 200mFWT). This increase in walking speed for the two walk tests correlated significantly with the improvement (decrease) in the Quebec scale (Figure 2). However, there was no statistically significant correlatation between the increased speed and the specific muscle assessment tests (Sorensen and Shirado tests).

The walking speed reserve, i.e. the difference between maximal walking speed and self-selected walking speed, was not significantly different before and after the program: 0.333 ± 0.137 (before) vs. 0.329 ± 0.155 (after); p=0.787.

Correlations between the 400mCWT and 200mFWT were good before and after the program: among the subjects, those with a slow 400mCWT had a slow 200mFWT, and those with a fast 400mCWT had a fast 200mFWT (Figure 3). Concerning the increase in walking speed linked to the training program, it was greater for subjects who walked at a slower pace initially for the two walk tests (Figure 3).

A non-significant difference was noted between walking speed (for both walk tests) in patients with low back pain only and that in subjects with LBP and referred leg pain (Table 3). Neither the sensitivity nor specificity of walking speed in the tests was good (area under the ROC curve was close to 0.5).

DISCUSSION

Multi-disciplinary rehabilitation for NLBP, which is based on a "bio-psychosocial model", has proved to have a greater impact on pain, disability and work status than does usual care [30]. Consequently, such a program is recommended as the first-line treatment [31]. However, as already highlighted, the means of its effectiveness measurements are insufficient. COS have been developed to compensate for this lack of reliable outcome parameters. Based on the Delphi process, COS have identified a minimum of outcome measures intended to increase the validity and statistical power of systematic reviews and meta-analyses in four domains defined as relevant: pain intensity, physical functioning, health-related quality of life, and number of deaths, for which validated measurement tools are required [10]. Concerning the physical function domain, the recommendations are to develop performance-based measurements which can provide "a more objective assessment of the total impact of pain" [32]. For this purpose, standardized walking tests seem of particular interest. However, these walk tests are rarely used in routine practice, probably because their psychometric properties have not been validated in the field of NLBP. Moreover, among the few existing studies on walk tests used to evaluate pain management programs, it is noteworthy that the instructions concerning the required walking speed are often not clearly reported [16,33]. Given the lack of studies on the potential value of walking speed, we proposed the current protocol to evaluate the interest of two different walking tests (at a comfortable and a fast speed). Indeed, the information provided by these two tests is potentially different and complementary in NLBP patients:

- The 400mCWT at a freely-chosen walking speed was first proposed as an alternative to the 6-min walk test in healthy elderly subjects [34] before being evaluated in cardiovascular diseases. It showed good feasibility, good reliability and its ability to explore aerobic capacities [17,35]. A free (comfortable, self-selected) walking speed has been known for decades to correspond to the best bioenergetic efficiency of walking [36]. It correlates with functional capacity and global health status [37]. The decrease in free walking speed in people with NLBP has long been known [14]. It is mainly related to decreased step length [38] and analyzed as a protective strategy against pain [39].
- The 200mFWT explores higher exercise intensity than that in the 400mCWT. The intensity is at least equal to the first ventilatory threshold, and thus partially involves anaerobic metabolism. It has the same good reliability as the 400mCWT [14,40,41]. Even over short distances, the fast walking speed is reduced in NLBP and appears to be more reliable and more valid than the preferred speed to distinguish between low-back pain patients and pain-free subjects [42], especially if the LBP is associated with referred leg pain [43]. The fear of pain also appears to be involved in this deficit in fast walking [14]. Indeed, a higher speed can be particularly harmful due to the induced motion pattern of the trunk. At a brisk walking speed, the anti-phase pelvis-thorax rotation is especially hampered in these patients compared with healthy subjects, probably to protect the spine and to prevent pain [44], but also because of axial trunk stiffness [45], although this has been refuted by recent work [46]. To our knowledge, a fast walk test has never been used to assess the effects of rehabilitation in NLBP. In one study, however, a brisk walking test was carried out in the form of a shuttle walking test (incremental walking speed). It showed a 25% increase in walking capacity after an exercise training program [47].

The results of the present study show that both the 400mCWT and the 200mFWT are feasible and well-tolerated in patients with chronic low back pain. These two walk tests are correlated and they are both relevant to assess a significant improvement in physical capacities (correlated with the Quebec scale) following a multi-disciplinary rehabilitation program, but they do not discriminate between patients with or without radicular pain. The mechanisms that may explain the improvement in walking speed after a multimodal program are diverse: intentional adaptation of locomotion according to the relief of pain [48], reduction in the reflex inhibition caused by pain on the brain and spinal centers of motion control [49], improvement in physical capacities due to exercise training [50]. On this last point, the 400mCWT reflects the improvement in aerobic capacities, whereas the 200mFWT is related to the improvement in submaximal performances, mixing aerobic and anaerobic metabolism. Otherwise, "non-organic, somatic components" of chronic low-back pain can influence walking capacity [51], and consequently, it is possible that the psychological impact of the program helped improve walking tests to an extent that is difficult to define. Perhaps, looking for possible relationships with the "Waddell's signs" [52] would be interesting to clarify this question.

The sensitivity to the induced change was the same for both the 400mCWT and the 200mFWT, because the walking speed reserve was similar for these two tests. There is therefore no definitive argument to couple these two walk tests to evaluate the effects of a multimodal program. To resolve this limitation of the study, specific complementary psychometric properties, such as the "minimal clinically important difference" and the "minimal detectable change", have to be determined. Further studies are also needed to better understand the interest of each test in assessing the precise initial severity of the disability. Indeed, in the present study, the initial walking speeds were not abnormal, unlike what is expected in patients with low back pain [13,14].

There is a potential bias inherent to the inclusion criteria, which may have led to the exclusion of the most severely affected patients with the most marked locomotor impairment from such a program.

It is also necessary to specify the role of walk tests in adapting the training program to patients. In particular, as it the case for cardiac rehabilitation, a walk test can be useful to determine the target HR for training and may thus represent an alternative to a maximal stress test during rehabilitation programs in NLBP [53]. Finally, it is impossible to extrapolate the results of this study to treatments other than multimodal programs, such as surgery, thus equally justifying future studies.

CONCLUSION

These two walk tests at two different speeds are well-tolerated and inexpensive procedures to assess the functional impact of a multimodal program, without requiring specialized staff or any specific equipment to measure gait parameters (motion analysis, electromyography…). Other studies are necessary to better determine their complete psychometric properties and the exact utility of each of these two tests. Such a strategy is promising in the functional assessment of NLBP and warrants investigation in various therapeutic interventions (e.g. surgery) in association with the other components of COS. Walking speed can become a key-parameter in the functional assessment of chronic low back pain.

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CONCLUSIONS

Ces tests de marche utilisant deux vitesses différentes sont des tests bien tolérés et peu coûteux pour évaluer l'impact d'un programme de prise en charge pluridisciplinaire, sans avoir recours à une équipe spécialisée ou un équipement spécifique pour la mesure des différents paramètres (analyse du mouvement, électromyogramme...). D'autres études sont nécessaires pour mieux déterminer les propriétés psychométriques et l'utilité de chacun de ces tests. Cette stratégie est prometteuse dans l'évaluation fonctionnelle des lombalgies communes chroniques et justifie une investigation dans d'autres domaines thérapeutiques (par exemple la chirurgie) en association avec d'autres composantes du COS (Core Outcome Set). La vitesse de marche peut devenir un paramètre clé dans l'évaluation fonctionnelle de la lombalgie commune chronique.

Le Président du jury,

Pr. H.J. SMOLIK

Vu et permis d'imprimer

Dijon, le 9 Juin 2017

Le Doyen

Pr. F. HUET

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Figure 1

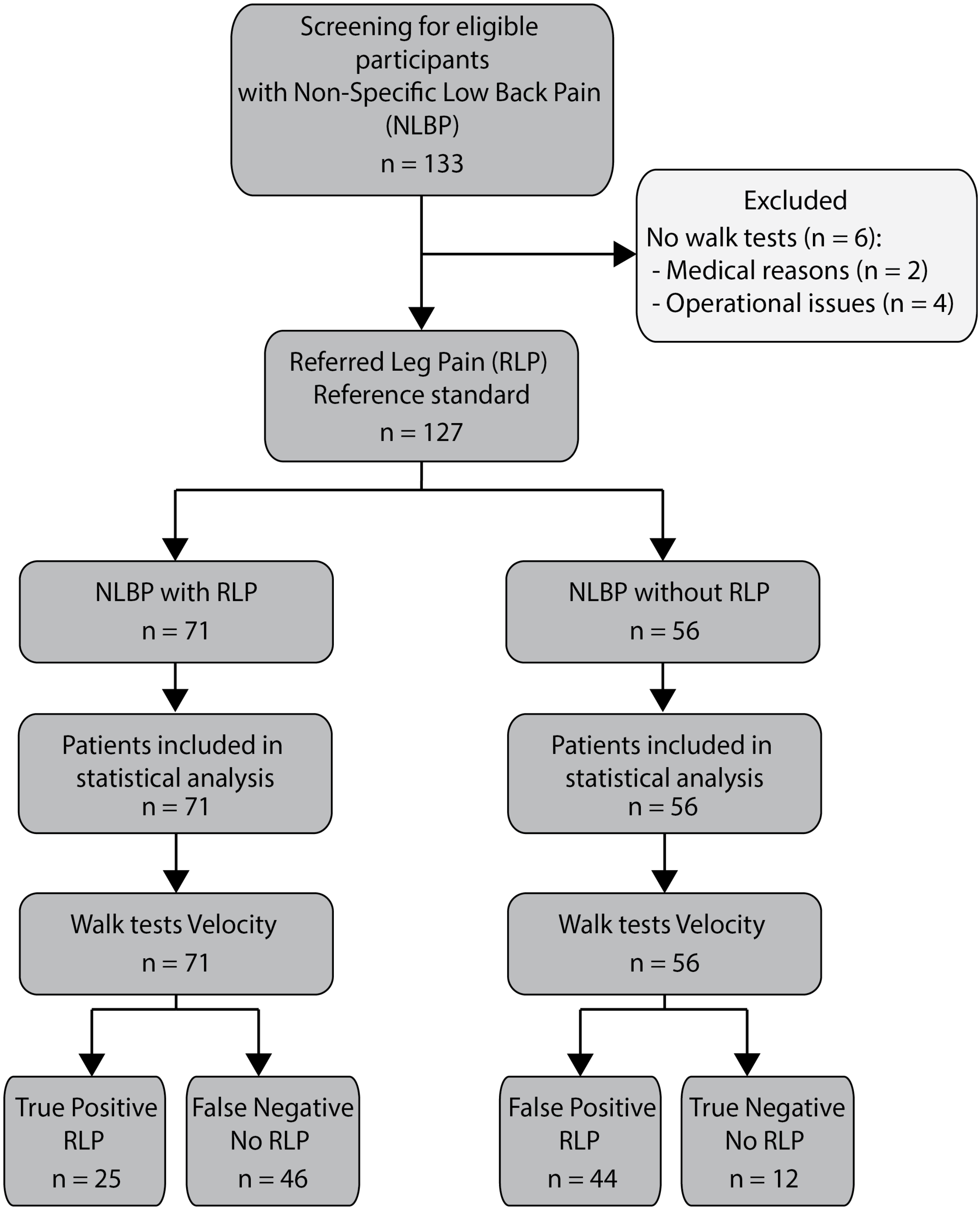
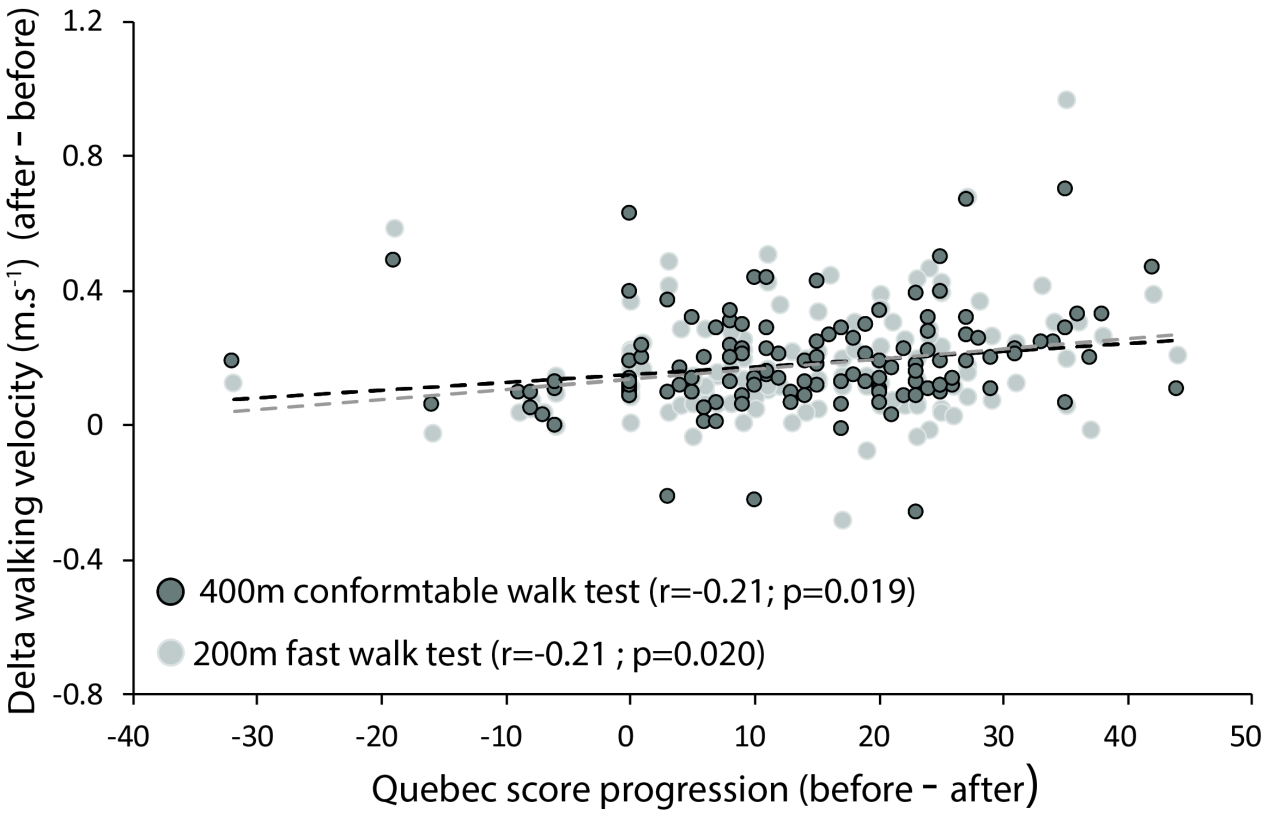
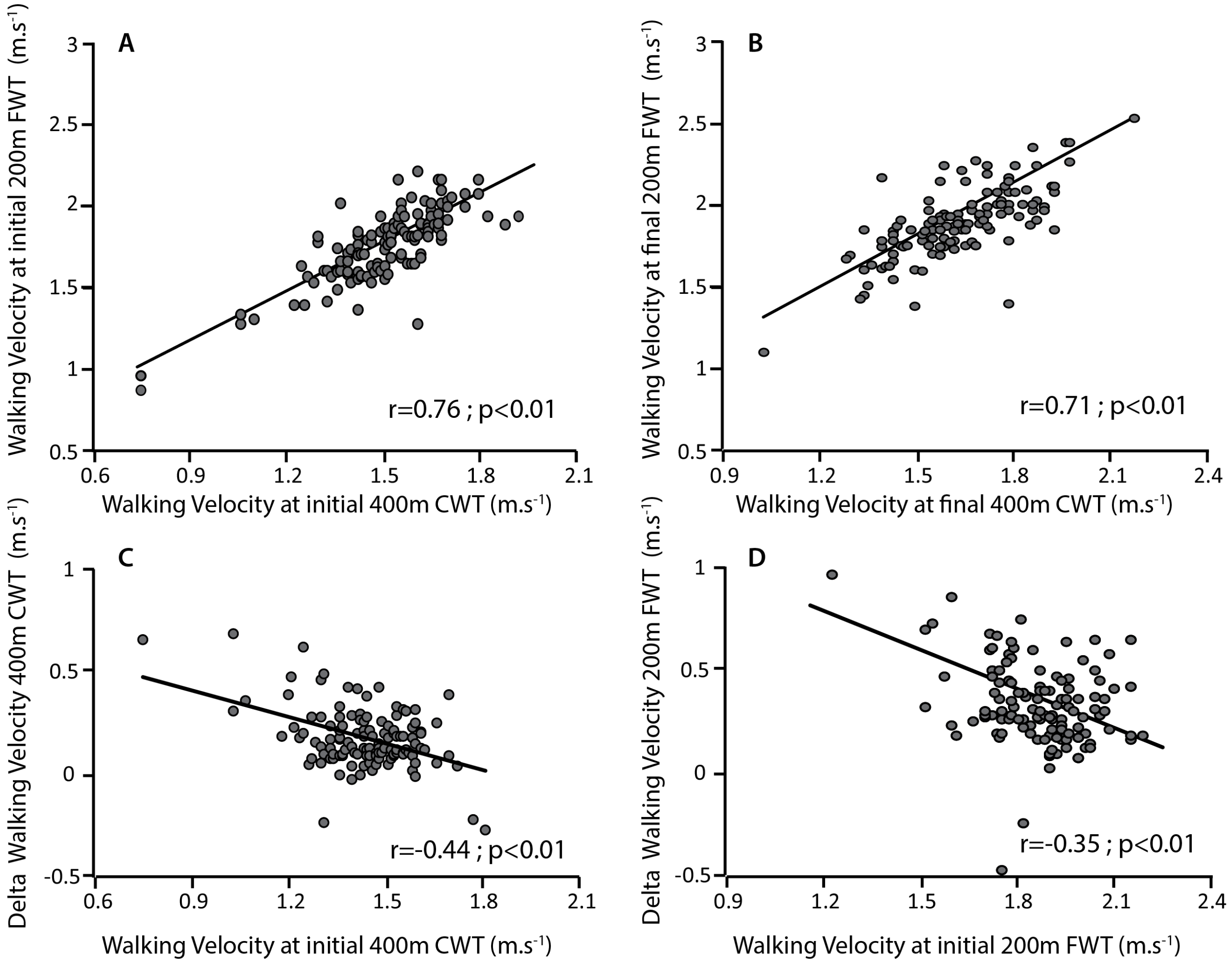

Screening for eligible participants with Non-Specific Low Back Pain (NLBP)
n = 133
Excluded
No walk tests (n = 6):
- Medical reasons (n = 2)
- Operational issues (n = 4)
Referred Leg Pain (RLP) Reference standard
n = 127
NLBP with RLP
n = 71
NLBP without RLP
n = 56
Patients included in statistical analysis
n = 71
Patients included in statistical analysis
n = 56
Walk tests Velocity
n = 71
Walk tests Velocity
n = 56
True Positive RLP
n = 25
False Negative No RLP
n = 46
False Positive RLP
n = 44
True Negative No RLP
n = 12

FIGURE 2



Delta walking velocity (m.s-1) (after - before)
1.2
0.8
0.4
0
-0.4
-0.8
400m conformtable walk test (r=-0.21; p=0.019)
200m fast walk test (r=-0.21 ; p=0.020)
-40
-30
-20
-10
0
10
20
30
40
50
Quebec score progression (before - after)

FIGURE 3



A
Walking Velocity at initial 200m FWT (m.s-1)
Walking Velocity at initial 400m CWT (m.s-1)
r=0.76 ; p<0.01
B
Walking Velocity at final 200m FWT (m.s-1)
Walking Velocity at final 400m CWT (m.s-1)
r=0.71 ; p<0.01
C
Delta Walking Velocity 400m CWT (m.s-1)
Walking Velocity at initial 400m CWT (m.s-1)
r=-0.44 ; p<0.01
D
Delta Walking Velocity 200m FWT (m.s-1)
Walking Velocity at initial 200m FWT (m.s-1)
r=-0.35 ; p<0.01

Parameters	Male	Female	Total
Sex	59	68	127
Age (Years)	47.1 (6.9)	45.4 (6.6)	46.2 (10.1)
Body Mass Index	27 (13.8)	25.8 (16.6)	26.4 (5.0)
Height (cm)	178.3 (4.0)	165.1 (5.7)	171.3 (9.4)
Weight (kg)	86 (9.6)	70.4 (10.4)	77.7 (17.2)
Disability duration (months)	76.2 (69.8)	69 (68.4)	72.2 (68.8)
Patients previously treated by surgery (number)	14	15	29
Patients with radiculalgia (number)	33	38	71

Table 1: Means (Standard Deviation) of characteristics of the cohort of non-specific low back pain patients depending of sex.

Parameters		Before (mean (SD))	After (mean (SD))	p-Value
400m Comfortable Walk test	Walking Velocity ($m.s^{-1}$)	1.44 (0.16)	1.61 (0.16)	<0.001
	Heart rate at rest (bpm)	81.5 (12.7)	82.3 (10.5)	-
	Heart rate end of test (bpm)	109.0 (15.9)	116.0 (15.8)	<0.001
200m Fast Walk test	Walking Velocity ($m.s^{-1}$)	1.77 (0.21)	1.94 (0.22)	<0.001
	Heart rate at rest (bpm)	81.6 (12.1)	82.4 (19.1)	-
	Heart rate end of test (bpm)	124.9 (11.2)	133.0 (19.3)	<0.001
Clinical outcomes	Shirado test (second)	145.2 (95.4)	230.8 (81.8)	<0.001
	Sorensen test (second)	181.5 (76.6)	276.5 (113.0)	<0.001
	Quebec score	42.8 (15.2)	28.7 (16.0)	<0.001
Stress Test	Metabolic Equivalent of Task	8.9 (2.2)		
	Heart rate at rest (bpm)	75.8 (21.8)		
	Maximal Heart rate (bpm)	162.1 (10.7)		

Table 2: Mean and Standard Deviation (SD) of the different values of the walk tests, clinical outcomes before and after the multimodal program. Stress test mean and SD parameters are also reported for the test before entering into the program. Significant difference between after and before are indicated with their paired t-test p-value.

Walking velocity (m.s-1)	Referred leg pain Mean (SD) Yes	No	p-value	AUC
Number of patients	71	56		
400m CWT Before	1.43 (0.16)	1.44 (0.16)	0.82	0.508
400m CWT After	1.62 (0.18)	1.60 (0.14)	0.39	0.572
Delta 400m CW (After - Before)	0.19 (0.15)	0.16 (0.14)	0.23	0.524
200m FWT Before	1.78 (0.22)	1.76 (0.20)	0.75	0.514
200m FWT After	1.96 (0.24)	1.93 (0.19)	0.49	0.568
Delta 200m CW (After - Before)	0.18 (0.17)	0.16 (0.16)	0.61	0.582

Table 3: Mean and Standard Deviation (SD) of the walk test results for patients with referred leg pain or not. T-test p-values are reported as well as Area Under the Curve (AUC) of the receiver operation characteristics.

WALKING SPEED: SENSITIVITY TO CHANGE AFTER A MULTIMODAL PROGRAM FOR NON-SPECIFIC CHRONIC LOW BACK PAIN.

VITESSE DE MARCHE : SENSIBILITE AU CHANGEMENT APRES UN PROGRAMME DE PRISE EN CHARGE PLURIDISCIPLINAIRE DES LOMBALGIES CHRONIQUES COMMUNES.

PAR DELPHINE TRAMPE

RÉSUMÉ

Contexte :

Le manque d'outils pour évaluer les traitements de la lombalgie chronique commune explique, au moins partiellement, l'augmentation d'incidence de ce handicap. Les tests de marche apportent un moyen possible pour évaluer l'état physique; la gêne à la marche étant le problème le plus souvent rapporté dans les lombalgies chroniques communes. Cependant, peu d'études ont spécifiquement évalué les tests de marche dans les programmes de prise en charge pluridisciplinaires, qui sont néanmoins recommandés en traitement de première intention.
Objectif : Evaluer la sensibilité au changement de deux tests de marche à distances déterminées, le 400 mètres marche confortable et le 200 mètres marche rapide, lors d'une évaluation fonctionnelle dans un programme pluridisciplinaire.

Matériel et méthode :

Analyse d'une cohorte rétrospective chez des patients adressés pour un programme de prise en charge pluridisciplinaire. 127 participants (moyenne d'âge: 46,2 ans +/- 10.1, 68 femmes) inclus en hôpital de jour dans un centre de rééducation hospitalier universitaire. Le 400 m marche confortable, le 200 m marche rapide, un test d'effort maximal sur tapis roulant, le test de Sorensen, le test de Shirado, et le score de Québec. Les patients ont été soumis aux tests au début et à la fin d'un programme de prise en charge pluridisciplinaire de 4 semaines.

Résultat :

Les tests de marche ont été bien tolérés, aucun patient n'ayant stoppé prématurémént. A la fin du programme, une augmentation significative des deux vitesses de marche est retrouvée (0.18 ± 0.15 $m.s^{-1}$ pour le test du 400m et 0.17 ± 0.17 $m.s^{-1}$ pour le test du 200m), L'augmentation est corrélée avec une amélioration du score de Québec ($r=-0.21$; $p<0.02$) mais pas avec les tests musculaires (Sorensen et Shirado). La réserve de la vitesse de marche n'est pas significativement différentr avant et après le programme : 0.333 ± 0.137 vs. 0.329 ± 0.155; p=0.787.

Conclusion :

La vitesse de marche confortable et rapide sont des tests appropriés pour l'évaluation fonctionnelle d'un programme pluridisciplinaire.

Mots clés:

Lombalgie chronique, prise en charge pluridisciplinaire, rééducation, vitesse de marche, test de mache