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Datasheet for the decision of 19 July 2023

Case Number: T 0562/21 - 3.2.02

Application Number: 12883552.7

Publication Number: 2892430

IPC: A61B5/22, A63B21/002, A61B5/11

Language of the proceedings: EN

Title of invention:
APPARATUS AND METHOD FOR KNEE FLEXOR ASSESSMENT

Patent Proprietor:
Queensland University Of Technology

Opponents:
Kangatech Pty Ltd
NJ Doherty Solutions Limited

Headword:

Relevant legal provisions:
EPC Art. 54, 56, 83
RPBA 2020 Art. 12(6)

Keyword:

Sufficiency of disclosure - (yes)
Novelty - (yes)
Inventive step - (yes)
Late-filed objection - admitted in first-instance proceedings (no) - admitted (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 0562/21 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 19 July 2023

Appellant: (Opponent 1)	Kangatech Pty Ltd 204-206 Arden Street North Melbourne VIC 3051 (AU)
Representative:	Fleuchaus & Gallo Partnerschaft mbB Steinerstraße 15/A 81369 München (DE)
Appellant: (Opponent 2)	NJ Doherty Solutions Limited Newtown Thomastown Kilkenny (IE)
Representative:	Schütte, Gearoid Cruickshank 8a Sandyford Business Centre Sandyford Dublin 18 (IE)
Respondent: (Patent Proprietor)	Queensland University Of Technology Garden Point Campus 2 George Street Brisbane, QLD 4000 (AU)
Representative:	Harrison, Robert John Sonnenberg Harrison Partnerschaft mbB Postfach 33 08 65 80068 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 11 March 2021 concerning the maintenance of European Patent No. 2892430 in amended form**

Composition of the Board:

Chairman	M. Alvazzi Delfrate
Members:	D. Ceccarelli
	C. Schmidt

Summary of Facts and Submissions

I. The opponents appealed against the Opposition Division's decision that, account being taken of the amendments made by the patent proprietor during the opposition proceedings according to auxiliary request 1, the patent and the invention to which it relates met the requirements of the EPC.

II. The Board summoned the parties to oral proceedings in accordance with their requests and sent a preliminary opinion, in which it expressed the view that the appeals would likely be dismissed.

III. After receipt of the preliminary opinion the appellant/opponent 1 ("appellant 1") withdrew its request for oral proceedings and the appellant/opponent 2 ("appellant 2") announced that it would not attend the oral proceedings.

IV. In view of the appellants' submissions and the preliminary opinion, the Board cancelled the oral proceedings.

V. The appellants requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeals be dismissed or that the patent be maintained on the basis of one of auxiliary requests 2 to 6 filed with the reply to the appellants' statements of grounds on 26 November 2021.

VI. The following documents are relevant to this decision:

D1: US 6,149,550 A
D4: WO 03/094732 A1
D16: US 2008/0119763 A1
D19: WO 2011/041678 A1
D20: US 4,647,038 A

VII. Claims 1 and 14 of the request found allowable by the Opposition Division in the impugned decision (main request on appeal) read as follows:

"1. An apparatus (100) for use in assessing strength of at least one knee flexor muscle of a subject, the apparatus including:

a. a support (110),

b. two securing members (121, 122), each securing member (121, 122) configured to secure a respective lower leg of the subject relative to the support (110), and

c. at least one sensor

characterized in that

the securing members (121, 122) are configured to secure the lower legs of the subject in a position that is substantially fixed relative to the support (110) when the subject lowers the subject's upper body from a kneeling position to perform an eccentric contraction of the at least one knee flexor muscle, and

the at least one sensor (130) is coupled to at least one of the securing members (121, 122) to sense a force applied to the at least one securing member (121, 122) by the subject's knee flexor muscle acting in eccentric contraction while the subject lowers the subject's upper body, the force being indicative of the strength of the at least one knee flexor muscle acting in eccentric contraction."

"14. A method of assessing strength of at least one knee flexor muscle of a subject using an apparatus (100) including a support (110), two securing members (121, 122), and at least one sensor (130) coupled to at least one of the two securing members (121, 122), the method including:

a. securing the lower legs of the subject using the respective securing members (121, 122), in a position that is substantially fixed relative to the support (110), when the subject lowers the subject's upper body from a kneeling position to perform an eccentric contraction; and;

b. sensing with the, or each, sensor (130) a force applied to at least one of the securing members (121, 122), by the subject's knee flexor muscle acting in eccentric contraction while the subject lowers the subject's upper body from the kneeling position to thereby perform the eccentric contraction of the hamstring while the subject lower legs are secured to the respective securing members (121, 122), which force is indicative of the strength of the at least one Knee flexor muscle."

Claims 2 to 13 and 15 are dependent claims.

VIII. The appellants' arguments, where relevant to the decision, may be summarised as follows.

Sufficiency of disclosure

The claims of the main request were directed to any kind of exercise for assessing strength of at least one knee flexor muscle. They were not limited to the Nordic curl exercise. Since the description of the patent only

disclosed an apparatus for assessing strength during the Nordic curl exercise, the claimed invention was not sufficiently disclosed.

Extension of subject-matter and of the scope of protection of the patent

Appellant 1 had raised objections under Article 123(2) EPC during the oral proceedings before the Opposition Division. The Opposition Division had held that these objections had been submitted late and had not admitted them. However, the Opposition Division had erred in holding the objections to have been submitted late on the basis that the request to which the objections had been raised had not been formally admitted into the proceedings until the decision to do so at the oral proceedings. An Opposition Division was obliged to assess whether the requirements of Article 123 EPC were fulfilled whenever an amendment was made to the claims of a granted patent. Moreover, the introduction of the "support" in claim 1 of the main request represented an extension of the subject-matter as claimed in the granted patent.

Novelty

The subject-matter of claim 1 of the main request was not novel over D1. D1 disclosed vertical posts supporting a horizontal bar to which force could be applied. The vertical posts and the horizontal bar, together with knurled grip zones 12 on the bar impeded lateral movement. They provided a level of lateral constraint comparable to that furnished by securing member 121 of Figure 3E of the patent. Hence, they constituted securing members suitable for a Nordic curl exercise, as also shown in some prior art YouTube

videos.

Inventive step

The subject-matter of claims 1 and 14 of the main request was not inventive.

Starting from D1, the objective technical problem would be to modify the apparatus of this document in order to improve the stability or security of the engagement of a user with the apparatus during a Nordic curl exercise. Bearing in mind that D1 already disclosed how and where to engage its apparatus, it would have been obvious to modify the horizontal bar of this document to incorporate some securing mechanism.

Starting from D4, the problem to be solved was to modify the apparatus of Figure 1 of this document to enable measurement of the performance of the users or how to provide assessment of hamstring strength while a subject is carrying out hamstring exercises on a hamstring exercise device. In view of either of these problems the person skilled in the art would combine the securing members with sensors disclosed in D16, D19 or D20 with the apparatus of D4 in an obvious way.

IX. The respondent's arguments, where relevant to the decision, may be summarised as follows.

Sufficiency of disclosure

The claims of the main request focused on the Nordic curl exercise. The patent comprised various embodiments and explanations of how the invention could be put into practice, including an explanation and the illustration of the different forces involved.

Extension of subject-matter and of the scope of protection of the patent

The Opposition Division had correctly concluded that the objections under Article 123(2) EPC had been filed late and were not *prima-facie* relevant. The objection of undue extension of subject-matter should be rejected.

Novelty

D1 did not disclose any securing member. The horizontal bar and the vertical posts were no securing members. They did not restrict lateral movement of the legs during a Nordic curl exercise. In particular, the vertical posts could only stop a lateral movement of the legs once the legs had come in contact with them.

Inventive step

D1 was not configured for a Nordic curl and this exercise had never been envisaged by D1.

The person skilled in the art would have had no incentive to combine the teaching of D4 with that of D16, D19 or D20. Starting from D4, there was no reason why the skilled person would have wanted to assess the muscle strength during the Nordic curl exercise. According to D4, strength measurements were performed after the training, i.e. after the Nordic curl exercises.

Reasons for the Decision

1. The patent

The patent relates to an apparatus and a method for assessing strength of at least one knee flexor muscle of a subject, in particular by sensing a force applied by the muscle while the subject is performing a Nordic hamstring curl. While doing this exercise, the subject lowers the subject's upper body from a kneeling position to perform an eccentric contraction of the knee flexor muscles (the exercise sequence is depicted schematically in Figures 1D to 1F of the patent, reproduced below).

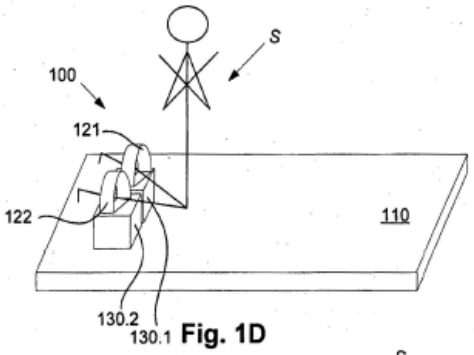

Fig. 1D

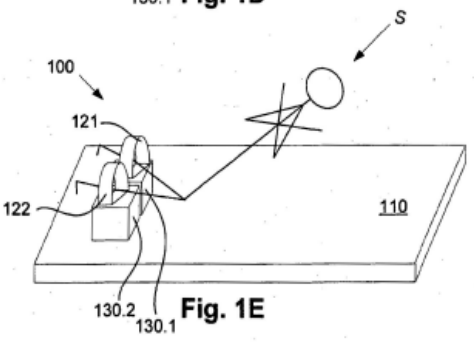

Fig. 1E

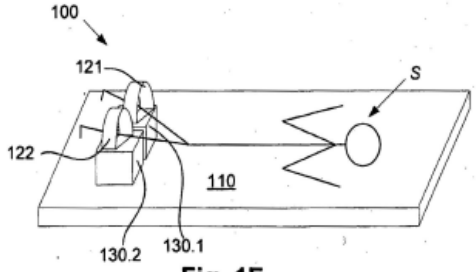

Fig. 1F

The apparatus according to claim 1 of the main request, one embodiment of which is depicted in Figure 2E of the patent reproduced below, includes a support (110), two securing members (121, 122) for the lower legs of the subject and at least one sensor (130.1, 130.2).

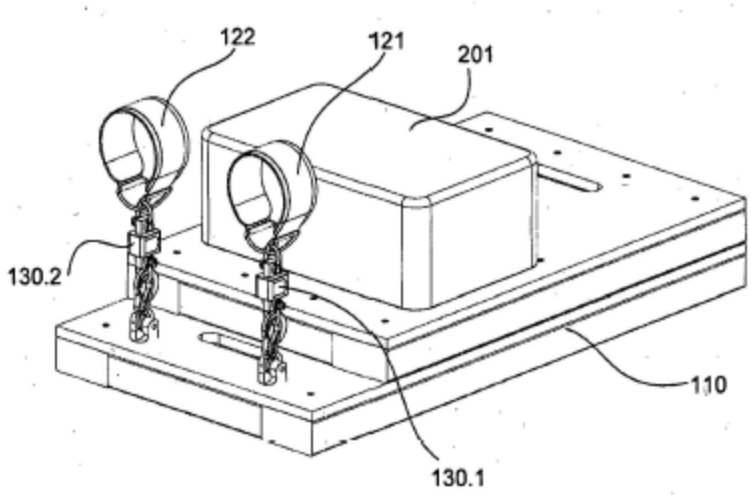

Fig. 2E

The securing members are configured to secure the lower legs of the subject in a fixed position relative to the support when the subject lowers the subject's upper body from a kneeling position to perform an eccentric contraction of the at least one knee flexor muscle (i.e. the subject performing the Nordic hamstring curl).

The sensor is coupled to at least one of the securing members to sense a force applied to the at least one securing member by the subject's knee flexor muscle acting in eccentric contraction.

According to the patent strength assessments of the hamstring (one of three posterior thigh knee flexor muscles between the hip and the knee) is important to

monitor recovery after hamstring strain injuries, which are common in a number of sports including sprinting, athletics, soccer, and other types.

2. Sufficiency of disclosure

Appellant 1 argued that the claims of the main request were directed to any kind of exercise for assessing strength of at least one knee flexor muscle. Since the description of the patent only disclosed an apparatus for assessing strength during the Nordic curl exercise, the claimed invention was not sufficiently disclosed.

However, independent claims 1 and 14 of the main request define an apparatus and a method for assessing strength of at least one knee flexor muscle of a subject. They are not directed to any exercise.

The description of the patent and the claims themselves explain how to perform this assessment, namely with the subject performing a Nordic hamstring curl (paragraphs [0018] to [0022]). Hence, the suitability of the apparatus and the method of using an apparatus for assessing the strength of the knee flexor muscle are sufficiently disclosed in the patent.

It follows that the main request fulfils the requirements of Article 83 EPC.

3. Extension of subject-matter and of the scope of protection of the patent

3.1 Appellant 1 raised objections under Article 123(2) EPC directed to the definition of the securing members and the introduction of the support in claim 1 of the main request on appeal (auxiliary request 1 before the

Opposition Division) for the first time during the oral proceedings at first instance. These objections were not admitted by the Opposition Division.

According to Article 12(6) RPBA 2020 the Board must not admit objections which were not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance.

The Opposition Division decided not to admit the objections for having been filed late and lacking prima-facie relevance, as duly explained in points 37.1 to 37.3 of the impugned decision.

The argument of appellant 1 that the Opposition Division had not formally admitted into the proceedings auxiliary request 1 until the decision to do so at the oral proceedings, and that the Opposition Division had been obliged to assess whether the requirements of Article 123 EPC were fulfilled as an amendment had been made to the claims of a granted patent are not convincing. Auxiliary request 1 had been on file already since long before those oral proceedings, and the Opposition Division performed a prima-facie assessment of the newly filed objections, concluding that they were not relevant.

Hence, the Opposition Division correctly exercised its discretion in not admitting the objections.

Appellant 1 has not explained - and the Board does not see - how the circumstances of the appeal would justify the admittance of the objections either.

For these reasons the objections under Article 123(2) EPC are not admitted into the appeal proceedings in accordance with Article 12(6) RPBA 2020.

3.2 As regards the objection of extension of the scope of protection over the patent as granted, this objection was first filed by appellant 1 with the statement of grounds of appeal. According to Article 12(4) RPBA 2020 this objection is an amendment to the appeal case of appellant 1, which may be admitted only at the discretion of the Board.

The Board notes that claim 1 of the patent as granted already referred to a support to which the lower legs of the subject could be secured. In claim 1 of the main request the support has been expressly claimed. This results in a limitation of the scope of the claim, rather than an extension. Hence, the objection is without merit and the Board decides not to admit it into the appeal proceedings under Article 12(4) RPBA, in accordance with the respondent's request.

4. Novelty

Appellant 1 argued that the subject-matter of claim 1 of the main request was not novel over D1.

D1 discloses an apparatus, depicted in Figure 1, for testing and indicating the strengths of individual muscles or groups of muscles.

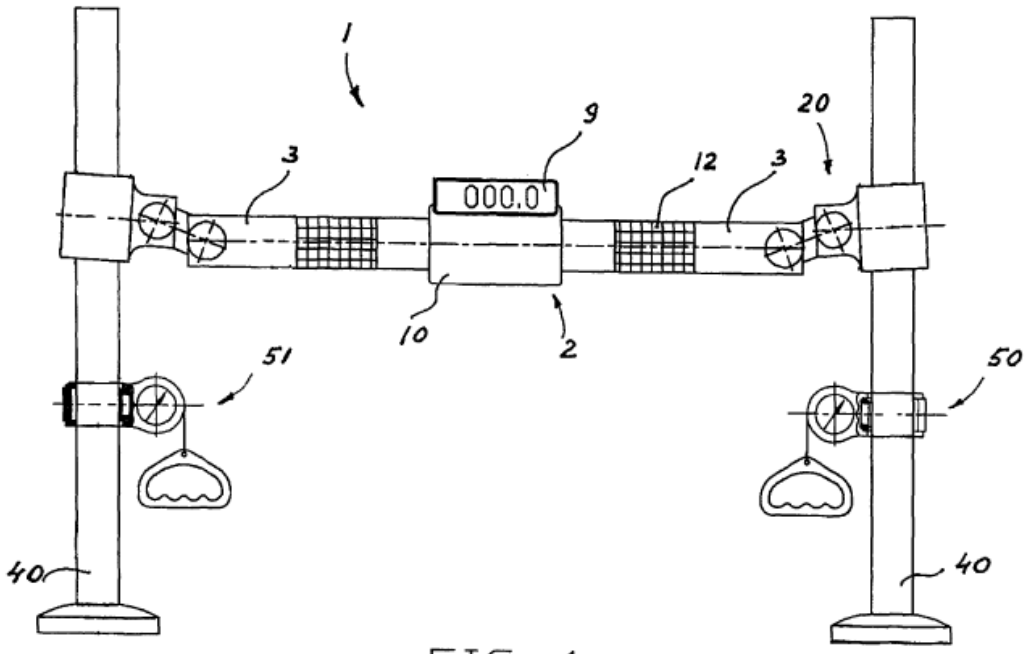

FIG. 1

The apparatus comprises a horizontal bar (1) connected to two vertical posts (40) and piezo-electric sensors for measuring the force applied at grip zones (12) exerted during up and down movements in the vertical direction and forward and backward movements in the horizontal direction (column 3, line 65, to column 4, line 4). The apparatus also comprises pull force measurement units (50 and 51) comprising handles connected to the posts (40), for measuring a pulling force applied to the handles.

D1 concerns a general-purpose apparatus and discloses a number of exercises in which force can be applied to the horizontal bar or the pull force measurement units. However, as noted by the Opposition Division in the impugned decision, D1 neither mentions nor hints at the Nordic hamstring curl exercise.

It does not disclose securing members configured to secure a respective lower leg of a subject in a

position that is substantially fixed relative to a support when the subject lowers the subject's upper body from a kneeling position to perform an eccentric contraction of the at least one knee flexor muscle, or a sensor coupled to at least one of the securing members to sense a force applied to the at least one securing member by the subject's knee flexor muscle acting in eccentric contraction while the subject lowers the subject's upper body.

Whether the horizontal bar and/or the vertical posts, in certain conditions of use, may be suitable to be used for the Nordic hamstring curl exercise by partly limiting the movements of the lower legs, as appellant 1 argued also with reference to Youtube videos, is not decisive. Claim 1 expressly recites securing members configured to secure a respective lower leg of a subject in a position that is substantially fixed relative to a support. The horizontal bar and the vertical posts alone cannot perform this function, as they permit unrestricted movement in several directions. The argument that the embodiment of Figure 3E of the patent provided a level of lateral constraint comparable to that furnished by the horizontal bar and the vertical posts of D1 is a mere allegation. That embodiment in the patent is expressly described as comprising securing members for the legs (paragraph [0042]).

It follows that the novelty objection (Article 54 EPC) raised by appellant 1 against claim 1 is not convincing. The same applies to independent method claim 14.

5. Inventive step

The appellants raised objections of lack of inventive step starting from D1 or D4.

5.1 As noted above, D1 neither mentions nor hints at the Nordic hamstring curl exercise. There is no apparent reason why the person skilled in the art would have modified, without hindsight, the apparatus disclosed in D1 to provide the securing members and the sensors for measuring forces applied during this specific exercise, as defined in claims 1 and 14 of the main request.

The problem formulated by appellant 1, i.e. how to modify the apparatus of D1 in order to improve the stability or security of that engagement during a Nordic curl exercise, cannot be accepted, as it contains a pointer to the solution, namely the adaptation to the Nordic curl hamstring exercise.

The objective technical problem must be more general, i.e. a way of rendering the apparatus of D1 more universal, such that more muscles or groups of muscles could be tested. Still, without any specific hint in the prior art to the specific solution as claimed for the Nordic hamstring curl exercise, the person skilled in the art would have not modified the apparatus of D1 accordingly.

5.2 Starting from D4, this document relates to the evaluation of the susceptibility of hamstrings to tear injury during eccentric contraction. It discloses an apparatus comprising a torque measuring device, for obtaining measurements of torque generated by the hamstring of a subject at different angles of extension (page 8, line 28, to page 9, line 2). As a torque

measuring device an iso-kinetic dynamometer is disclosed (page 10, lines 13 to 25). Such a device is for testing only one leg at a time while the subject is seated with the hip joint at approximately 90° flexion, with the subject preferably performing iso-velocity shortening (page 8, line 31, to page 9, line 1). As the respondent pointed out, the torque measurements are normally performed to evaluate the effects of previous training, e.g. after sessions of Nordic curl exercises performed with the standard apparatus according to Figure 1 of D4.

D4, in particular Figure 1, does not disclose any sensors coupled to securing members configured to secure a respective lower leg of a subject in a position that is substantially fixed relative to a support when the subject lowers the subject's upper body from a kneeling position to perform an eccentric contraction of the at least one knee flexor muscle.

Appellant 2 argued that the objective technical problem was how to provide assessment of hamstring strength while a subject is carrying out hamstring exercises on a hamstring exercise device. Appellant 1 argued that the objective technical problem was to modify the apparatus of Figure 1 of D4 to enable measurement of the performance of the users. However, Figure 1 of D4 shows a generally known apparatus for performing the Nordic hamstring curl, and D4 simply discloses that this exercise can be performed during rehabilitation. Modifying this apparatus to enable measurements of parameters cannot be accepted as the objective technical problem, as it contains a pointer to the solution, namely measuring parameters during the performance of a Nordic hamstring curl.

The objective technical problem must be more general, i.e. a way of effectively monitoring the progress of rehabilitation.

D4 does not teach to sense any parameter during a Nordic hamstring curl exercise. D16, D19 and D20 relate to acquiring data from sensors used with a variety of physical exercise components. However, they do not teach to sense any parameters during the performance of a Nordic hamstring curl.

Without any hint in the prior art to the specific solution as defined in claims 1 and 14 of the main request, the person skilled in the art would have had no obvious reason to modify the standard apparatus according to Figure 1 of D4 and provide it with sensors accordingly.

5.3 Hence, the objections of lack of inventive step (Article 56 EPC) raised by the appellants are not convincing.

6. Since none of the objections raised by the appellants prejudices the maintenance of the patent on the basis of the main request, the appeals must be dismissed.

7. After the appellants, i.e. the parties adversely affected by this decision, had withdrawn the request for oral proceedings or announced not to participate, this decision could be taken in writing.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar: The Chairman:

A. Pinna M. Alvazzi Delfrate

Decision electronically authenticated