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DESCRIPTION

Technical field

[0001] The present invention relates to an exercising apparatus for calf muscle stretching.

Background

[0002] During exercise, keep-fit activities and rehabilitation, it is common that a practitioner carry out so called stretching, for stretching of different groups of muscles like, inter alia the calf muscle. The calf muscle consists of two parts: the twin muscle (gastrocnemius) with its two projections from the back side of the condyles of the thigh-bone and the soleus muscle, a flat muscle on the back side on the fibula. The muscle parts join in the Achilles tendon that attach on the heel bone (calcaneus). For stretching of the calf muscles, a usual exercise is to place the leg to be stretched in a direction behind the body as far back as possible, with the heel in contact with the base. The other leg is suitably placed a distance ahead of the body. Either the person leans against the wall or the similar, or tries to balance with the hands around the waist of the body. The stretching of the calf muscle is activated by forcing the foot blade against the base a few seconds, in order then to slowly bend forward in the ankle joint such that the calf muscle is stretched. By a straight knee, the gastrocnemius muscle is stretched and by a bent knee the soleus muscle is stretched.

[0003] Shortened calf muscles may result in that the foot decides to take a position with the toes pointing downwards. This may give inconveniences such as periostitis, Compartment syndrome, difficulties to descend stairs in a usual way, and also weakness in the shortened musculature. The problem related to stretching of gastrocnemius and soleus is that unstressing is difficult since the muscle must be balanced, stressed and relaxed. It is also difficult to find the correct stretching movement.

[0004] An exercise for stretching of the calf muscle as has been described above may thus be difficult or even impossible to perform correctly alone without facilities, for instance for unskilled exercisers or persons that are during rehabilitation training, and therefore there is a need for facilitating the stretching of the calf muscle.

[0005] Various means for facilitating the stretching of the calf muscle are known. In common for those known apparatus is that they are either relatively complicated or that they are not working satisfactory in a desired way.

[0006] By US-A-5,611,770 an aid is previously known for the stretching of the calf muscle for patients during rehabilitation.

[0007] US 2006/0058719-A discloses an apparatus for ankle mobilisation.

Description of the invention

[0008] An object with a present invention is to provide an aid for stretching of muscle groups of the calf that at least partially eliminates those drawbacks that are associated with devices according to the state of the art. A further object is to achieve an aid for stretching of the calf muscle that may provide sufficient power during the stretching, for efficient stretching of the calf muscle. An additional object is to achieve an equipment for calf muscle stretching that is sample to use and prevents the risk for incorrect stretching of the calf muscle.

[0009] This object is achieved by an exercising apparatus for the calf muscle stretching of a leg of a practitioner according to the present invention as defined in claim 1, which comprises a foot support having an upper side for supporting the foot of the practitioner and a lower side intended to be arranged on a base, where the upper side is arranged with an inclination compared to the lower side such that a first part of the foot support, for supporting a toe part of the foot, is arranged on a distance from the base, and where the foot support has attachment means at a second part of the foot support for securing a heel part of the foot. On one side of the foot support, at the second part of the foot support, a bar extending in the vertical direction is arranged in a joint, the bar is rotatably arranged to the foot support in said joint. The bar comprises a handle part and a supporting part, which supporting part is arranged between the handle part and the joint, which supporting part is intended as support for the calf of the practitioner. The supporting part extends at least around a part of the calf, where a stretching of the calf muscle of the practitioner may be provided by bringing the bar during rotation in the joint in a direction against said first part of the foot support while the

heel part of the practitioner is secured at the foot support and the calf is supported by the supporting part and brought in the rotational direction, such that a sufficient stretching of the calf muscle is achieved.

[0010] An advantage with this solution according to the present invention is that stretching of the calf muscle may be performed in a correct way such that the stretching becomes sufficiently effective and powerfully performed. Yet an advantage is that stretching may be performed in a safe and reliable way, such that the risk for injuries may be avoided. Yet an advantage is that the present invention eliminates the need for an instructor for correct performance of the stretching. The exercising apparatus according to the present invention is further more user-friendly. Stretching of the calf muscle may be performed by straight or bent knee and it is also possible to lean the foot sideways on the foot support, for stretching different muscles of the calf. In that the foot board is arranged with an inclination against the base, the practitioner may stand steadily with support of the foot placed on the upper side of the foot support and additionally the practitioner does not need to lean the leg as far forward, during the stretching of the calf muscle, during the use of the exercising apparatus, which makes the stretching of the exercising apparatus according to the present invention user-friendly, safe and efficient. By the apparatus according to the present invention, the calf muscle may be stretched in relaxed condition without having stresses in the other muscles, so called antagonists, influencing the stretching ability. It is also possible to keep the stretching position a longer time, since other muscles are not strained.

[0011] Further advantages and features according to embodiments of the invention is evident from the claims, and also in the following description of the embodiments.

Description of the drawings

[0012] The present invention will now be described more in detail in embodiments, with reference to the attached drawings, without a limited interpretation of the invention to those, where

Fig 1A is a perspective view slantingly from the front showing an exercising apparatus according to the present invention, and

Fig 1B is a view straight from the back showing the exercising apparatus according to fig 1A.

Detailed description of embodiments

[0013] In fig 1A and B there is shown an embodiment of an exercising apparatus 2 for calf muscle stretching of a leg of a practitioner, according to the present invention. The exercising apparatus 2 comprises a foot support 4 having an upper side 6 for supporting of the foot of the practitioner and a lower side 8 intended to be arranged against a base 10. According to the embodiment shown in fig 1A-B, the foot support 4 is designed with an elevated part 11, that comprises the inclined upper side 6, and two protruding flat side parts 11' that are extending on each side of the middle part 11. This design has been achieved by bending of a sheet metal. Of course, the foot support may be designed and produced in another way, for example by moulding in one piece. The upper side 6 is arranged with an inclination α in comparison to the lower side 8 such that the first part 12 of the foot support, for supporting of a toe part of the foot, is arranged with a distance D from the base. In the shown embodiment in fig 1A and B, the inclination of the upper side of the foot support relative the base, and with that the distance D, can not be adjusted. Of course, it is within the scope of the protection of the present invention that the upper side may be adjustably arranged at the foot support such that the inclination α and the distance D relative the base may be adjusted. The foot support 4 has attachment means 14 at a second part 15 of the foot support for securing a heel part of the foot. Attachment means 14 may be in form of a strap (not shown) or the similar that is arranged at the foot support 4, or a U-shaped clamp 16 securely arranged at the foot support, as is evident in fig 1A and B.

[0014] At a long side 18 of the foot support 4, at the mentioned second part 15 of the foot support, suitably in close connection to a foot joint of the practitioner when the foot is placed on the foot support, a bar 22 is arranged in a joint 20 extending in a vertical direction. The bar 22 is rotatably arranged to the foot support 4 in said joint 20. The bar 22 comprises a handle part 23 and a support part 24 intended for supporting the calf of the practitioner. The supporting part 24 is arranged between the handle part 23 and the joint 20. The bar 22 has suitably a straight longitudinal extension, preferably vertical, in a first part 26 that extends from the joint 20 up to the supporting part 24, which constitutes a second part 28 of the bar 22. The supporting part 24 is designed such that it extends at least around a part of the calf. As is evident from the embodiment shown in fig 1A and B, the bar may be in the shape of a round pole, that in the middle in the second part 28 has been designed with a partly helically bending 29. If the bar 22 is viewed in an elevated view straight from above or from below, that is seen perpendicular against the horizontal plane, the

bending presents a semicircular form or a U-shape, form fitted after the shape of a calf. From a viewpoint of comfort and for adapting of different sizes of calf's, the supporting part may suitably be provided with a soft non-rigid material. The handle part may suitably have a straight longitudinal extension, essentially vertical, in a third part 30 of the bar that extends from the connection to the supporting part 24. As is evident in the shown embodiment in fig 1A and 1B, the bar 22 is designed such that the bar extends in the first part 26 along a side of the leg of a practitioner and that the third part 30 comprising the handle part, extends at least along a part of the opposite other side of the leg of the practitioner, when a practitioner of the exercising apparatus has placed the foot on the foot support 4 and the calf of its leg in contact with the supporting part 24.

[0015] According to a second alternative embodiment (not shown), a second bar may be rotatably arranged in a joint at a second long side 18' of the foot support 4, opposite the first long side 18, which second bar is arranged to the supporting part 24. According to this second embodiment, the exercising apparatus may then be shaped such that the two bars are extending essentially vertically on each long side of the foot support and where the supporting part 24 is arranged between the bars.

[0016] According to a preferred embodiment, the exercising apparatus according to the present invention comprises a stop member 32 that is arranged such that the bar may be brought sufficiently far forward for achieving a correct and powerful stretching, at the same time as it prevents the bar from being brought forward too long, to prevent occurrence of injuries during incorrect use. Preferably the stop member 32 is adjustably arranged to the bar such that the desired movement of the bar in a direction R1 towards said first part 12 of the foot support may be set to a desired degree. Suitably the stop member 32, for instance in a shape of a threaded pin, may be releasably and adjustably arranged to a disk-shaped plate 34, which plate is vertically arranged around the joint at the side of the foot support 4. The bar 22 may rotate along the disk-shaped plate, that has indications of the inclination in degrees, which the bar may rotate from the initial position at a substantially vertical extension. The stop member 32 may be secured at a desired inclination in degrees to a position where the bar 22 shall be brought forward maximally. The bar may comprise two arms 36 that form a U-shaped part in its end against the joint, which free ends 38 of the arms are arranged in the joint 20, respectively. In the U-shaped part, between the arms, the disk-shaped plate 34 is arranged.

[0017] The upper side 6 of the foot support 4 is suitably also sufficiently wide such that the foot can be leaned sideways, inwards or outwards, in order to be able to decide the stretching effect on the inside or the outside of the calf musculature during bent or extended knee joint. It is also possible according to a non-shown embodiment that the upper side 6 is adjustably arranged at the foot support for setting the inclination sideways.

[0018] A suitable total height for the exercising apparatus, from the base up to the end of the handle part of the bar, may be about 100 cm and a suitable height up to the connection of the handle part at the supporting part 24 can be about 45 cm. The first 26, the second 28 and the third 30 part of the bar 22 may suitably be mutually adjustable in the longitudinal extension. The distance D of the foot support 4 may suitably be 7-8 cm. Of course, the present invention is not limited to those dimensions mentioned above.

[0019] A stretching of a practitioner's calf muscle, by straight or bent knee for stretching of the muscle gastrocnemius or the muscle soleus of the calf, may be achieved by bringing the bar 22 in a direction R1 towards said first part 12 of the foot support, during rotation in the joint 20, while the heel part of the practitioner is secured at the foot support 4 and the calf is supported by the supporting part 24 and brought in the rotational direction R1, such that a sufficient stretching of the calf muscle can be provided.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- [US5611770A](#) [0006]
- [US20060058719A](#) [0007]

PATENTKRAV

1. Træningsapparat (2) til strækning af lægmusklen på en trænendes ben, hvilket apparat omfatter en fodstøtte (4), der har en øvre side (6) til at understøtte
5 en brugers fod og en nedre side (8) beregnet til at blive anbragt mod en base (10), hvor den øvre side er anbragt med en hældning (α) i forhold til basen, således at den første del (12) af fodstøtten, til at understøtte en tådel af foden, er anbragt i en afstand (D) fra basen, og hvor fodstøtten har et fastgørelsesmiddel (14) ved en anden del (15) af fodstøtten til fastholdelse af en hældel af foden, **kendetegnet ved, at** der på en side (18) af fodstøtten (4), ved den anden del (15) af fodstøtten,
10 er anbragt en stang (22), der strækker sig i en vertikal retning, i et led (20), ved, at stangen (22) er anbragt roterbart i forhold til fodstøtten (4) i leddet (20), stangen (22) omfatter en grebsdel (23) og en understøttende del (24), hvilken understøttende del (24) er anbragt mellem grebsdelen (23) og leddet (20), hvilken
15 understøttende del er beregnet som støtte for den trænendes læg, den understøttende del strækker sig mindst omkring en del af læggen, hvor strækning af den trænendes lægmuskel kan opnås ved at bringe stangen (22) under rotation i leddet (20) i en retning (R1) mod den første del (12) af fodstøtten, mens den trænendes hældel er fastholdt ved fodstøtten (4), og læggen understøttes af den
20 understøttende del (24) og bringes i rotationsretningen (R1), således at der opnås en tilstrækkelig strækning af lægmusklen.
2. Træningsapparat ifølge krav 1, **kendetegnet ved, at** den understøttende del (24) er designet med en spiralformet bøjning (29).
- 25 3. Træningsapparat ifølge krav 2, **kendetegnet ved, at** den spiralformede bøjning (29) har en halvcirkelform set vinkelret fra et horisontalt plan.
4. Træningsapparat ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** det omfatter et stopelement (32) til at forhindre stangen (22) i
30 at blive bragt for langt frem under rotation af stangen.
5. Træningsapparat ifølge krav 4, **kendetegnet ved, at** stopelementet (32) er justerbart anbragt i forhold til stangen, således at en ønsket bevægelse af stangen

i en retning (R1) mod den første del (12) af fodstøtten kan indstilles til en ønsket grad.

6. Træningsapparat ifølge krav 4 eller 5, **kendetegnet ved, at** stopelementet
5 (32) er anbragt i forhold til en skiveformet plade (34), hvilken plade er vertikalt anbragt omkring leddet (20) ved siden af fodstøtten (4).

7. Træningsapparat ifølge krav 6, **kendetegnet ved, at** stangen (22) i sin
ende mod leddet omfatter to arme (36), der danner en U-formet del, hvis frie ender
10 (38) af armene er anbragt i leddet (20).

8. Træningsapparat ifølge krav 7, **kendetegnet ved, at** den skiveformede plade (34) er anbragt i den U-formede del mellem armene (36).

15 9. Træningsapparat ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** stangen (22) er designet, således at den har en forlængelse i den første del (26) langs en side af benet på en trænende, under dets placering i træningsapparatet, og ved, at den tredje del (30) omfattende grebsdelen har en forlængelse langs den modsatte anden side af den trænendes ben.

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10. Træningsapparat ifølge krav 1, **kendetegnet ved, at** en anden stang er roterbart anbragt i et led ved en anden langside (18') af fodstøtten (4), og ved, at den understøttende del (24) er anbragt mellem stængerne.

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DRAWINGS

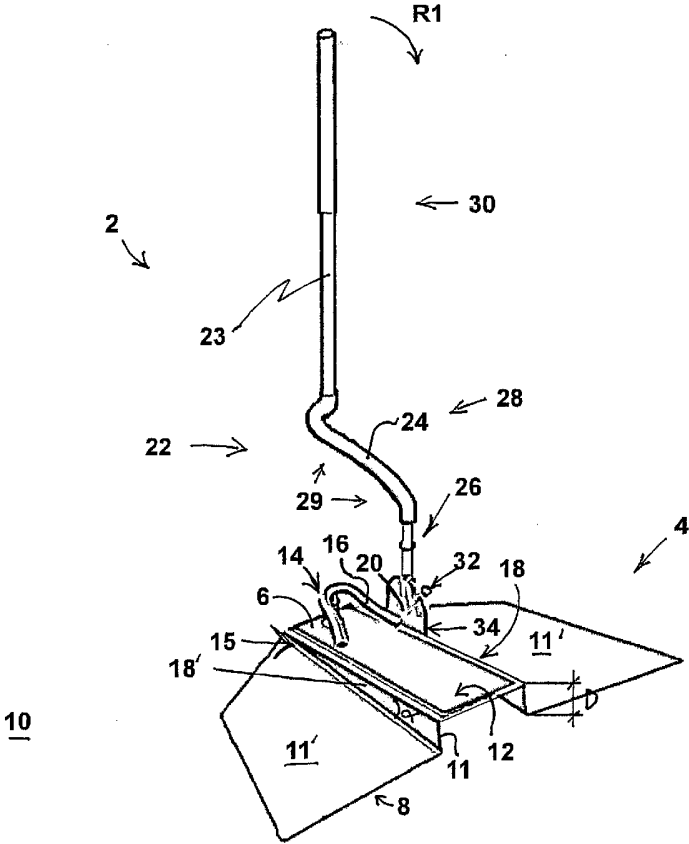


FIG. 1A

