Title: GYMNIC GARMENT AND RELEVANT KIT

Abstract: The invention relates to a gymnastic device or kit (1) for the execution of exercises exploiting the elastic reaction of extensible elements; the kit comprises: - a pair of elastic straps (2), presenting a distal or bottom end (20) and a proximal or upper end (21); - a garment wearable by the user comprising a pair of trousers (3) provided with a pair of channels (32), extending along both legs of the trousers (3), in which are inserted said elastic straps (2), and fastening means for fixing said proximal end (21) of the straps (2) to the trousers (3); each of said channels (32) extending, from top to bottom, according to a curved path that starts from the external area of the trousers leg, in correspondence of the sides, and that extends towards the rear area of the leg; - a pair of shoes (4) provided with fastening means for said distal end (20) of said elastic straps (2).

Fig. 13
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TITLE: GYMNIC GARMENT AND RELEVANT KIT

DESCRIPTION
The present invention relates to a gymnic garment and a related kit comprising the garment and a pair of shoes connected to it.

In particular, the gymnic or exercise garment and the kit of the present invention are intended to form a new and efficient tool to be applied to the human body to allow a continuous series of exercises that exploit the elastic properties of a pair of belts.

The invention is also particularly important in the field of rehabilitation because it facilitates the locomotion of subjects presenting some pathologies of the movement.

It is known the use of elastic belts or spring extenders for the execution of gymnastic or rehabilitation exercises.

Are also known gymnic devices, more or less complex, that use elastic straps applied to portions of the human body.

For example, US-1663641 describes a pair of belts to be applied to the shoulders and at the foot of a user to perform exercises.

US-2097376 describes a pair of elastic straps which are connected at the top to a sort of bodice and inferiorly to the shoes worn by the user by means of hooks.

US-5606745 and US-5867827 relate to gymnic suits provided with zones in elastic material to allow the execution of exercises, elastically deforming the portions of the suit arranged in correspondence of some parts of the body such as, for example, the upper and lower limbs.

Another gymnic garment is described in US-4065814, in which is shown a suit that covers the upper and lower limbs of the wearer's body and is provided with elastic bands which extend along the entire body of the user, from the shoulders to the area lower legs. The elastic bands are arranged on the front and on the back of the suit. As provided in US-4065814, the elastic bands placed on the front are subjected to stress when the user's leg is bent, by subjecting the body of the wearer to a stress greater than during the free-moving. In practice, US-4065814 teaches the use of a gymnic suit able to provide an elastic reaction to substantially all the activities of the user, without a specific purpose, and this is a drawback in cases where it is necessary to work only a specific part of the musculature, or in cases where it is only a particular limb movement that needs to be improved and/or cured.
The systems known until now are impractical and are usable with a certain difficulty. Their use is limited to gyms and similar places, because these systems are not compatible with the commonly used clothing for every day.

Aim of the present invention is to provide a gymnic garment and a related kit comprising the garment and a pair of shoes connected to the garment that can solve the drawbacks mentioned above.

This result has been achieved in accordance with the invention by adopting the idea of making a garment having the characteristics described in the independent claims. Other features are described in the dependent claims.

Among the advantages of the present invention can be listed those described below.

The garment and the kit allow to perform continuously a series of exercises in natural and spontaneous way; with the present invention it is possible to adjust in easy and intuitive way the force required for the execution of the exercises; in addition, the garment can be worn even in non strictly sporting field, i.e. it is not limited to be used in gyms and similar places because it includes a pair of trousers of substantially "normal" manufacture that can be used in a great variety of situations; in other words, with the present invention it is possible to practice in a continuous manner at all times of the day, without the limitations usually determined by a purely sporting apparel; the exercises allowed by the present invention are extremely effective because they determine an alternation between the movement of "push" exercised by the user and the "return" determined by the elastic reaction of the bands that are part of the present system; the proper foot contact with the ground is facilitated by the lifting of the rear of the foot determined by the intervention of elastic band that applies its reaction to the rear of the foot.

The garment and the kit also enable an extremely high number of gymnastic and rehabilitation exercises.

The exercises can be performed may be very different among them, affecting, with variable intensity, different parts of the body, with different methods of approach to the exercise and, consequently, with the ability to perform both workouts generic type that aimed at specific targets, of sporty and / or of rehabilitation type.

The garment and the kit have a structure of simple construction, user friendly and of considerable strength, able to maintain its characteristics unchanged even after prolonged use. As will be described in detail below, the present invention constitutes a functional and integral element of the movement without constituting a tool bulky or showy; in other words, with the
present invention it is possible to perform gymnastic and rehabilitation exercises with a
dynamic use of a garment capable to effectively integrate the motorial requirements with an
extremely high fit, such as to allow the use of the garment in all conditions.
These and other advantages and features of the present invention will be best understood by
anyone skilled in the art from the following description and with the help of the attached
drawings given as a practical exemplification of the invention, but not to be considered in a
limiting sense, in which:
- Fig.1 is a schematic perspective view of a possible embodiment of a gymnastic garment in
accordance with the present invention worn by a user;
- Figs. 2, 3, 4, 5 show the example of Fig.1, which is represented, respectively, in a front view,
in a partial rear view from the inside, in a partial rear view of the outer, in a rear view;
- Figs. 6, 7 relate to particulars of the means for adjusting the straps;
- Figs. 8, 9 are perspective views of a shoe of the invention, represented in two possible
embodiments;
- Figs. 10, 11 and 12 are schematic views relating to manufacturing a sole for footwear in
accordance with the invention according to the embodiments of Figs. 8 and 9;
- Fig 13 is a partial perspective view from the rear of another possible embodiment of the
invention, in which is visible a trousers combined with a shoe;
- Figs. 14, 15 are partial perspective views from the rear relative to the binding mode of the
shoe to the pants, according to the example of Fig.13;
- Figs. 16, 17, 18, 19, 20 show the example of Fig.13, which is represented, respectively, in a
rear view of only trousers (Fig.16), in a perspective view from the rear of the trousers with the
shoe (Fig.17), in a front view (Fig.18) and rear view (19) of only trousers, and in a view
relevant to three particulars (Fig.20), with a partial rear view of the outer (left in the drawing),
a partial view from the inside (at center), and a view relevant to the composition of the elastic
band (on right), and
- Fig 21 is relative to a shoe used in accordance with the example of Fig.13, represented,
respectively, in a rear view and a side view.
Referring initially to the example of the drawings of Figs. 1-12, an exercise device or kit
according to the invention (marked with the reference 1 in the present description) is used to
allow the execution of exercises exploiting the elastic reaction of extensible elements.
The extensible elements are constituted by a pair of elastic straps (2), presenting a distal or
bottom end (20) and a proximal or upper end (21).
The kit (1) further comprises a garment worn by the user comprising a pair of trousers (3) provided with a pair of channels (32), extending along both legs of the trousers (3), in which are inserted said elastic straps (2), and fastening means for connecting said proximal end (21) of the belts (2) to the trousers (3).

The gymnic device or kit (1) further comprises a pair of shoes (4) provided with fastening means for said distal end (20) of said elastic straps (2).

In particular, the adjustment means of the deformability of said belts (2) are constituted by adjusting means (23) for regulating the length of the portion of belt comprised between the lower end (20), fixed to the shoe, and the upper end (21), attached to the trousers at the waist.

In the illustrated example, the adjustment means (23) of the length of the straps (2) comprise, for each side of the pants, a buckle that holds said upper end (21) of each belt (2).

It is particularly important the arrangement of channels (32) with respect to the trousers (3). In fact, studies conducted by the applicants have shown that the optimal path for said channels is a kind of slight curve, starting from the external area of the trousers leg, in correspondence of the hips, and which extends towards the rear of the leg. With this arrangement of the channels (32), the elastic reaction of the belts (2) does not affect the fit of the garment and the correct execution of the exercises. At the same time, the elastic straps can perform a slight sliding inside the channels making even more effective the execution of the exercises, without any prejudice to the wearability of the garment.

In Fig 3 is shown the channel (32) from the inside. The channel (32) is internally delimited by fabric, for example of the type used to line the pockets and / or in jersey or other convenient type. In its upper portion, the channel (32) has an opening (30) crossed by the strap (2), which protrudes from the channel (32) inside of the trousers, as shown in the lower part of the drawing.

The distal or bottom end (20) of the belts (2) is provided with a closed ring (22) adapted to wrap a portion of the user's foot. The ring (22) can wrap the foot and it can be directly inserted inside the shoe (4). Alternatively, the ring (22) can wrap the foot indirectly, passing in a relative seat or groove (40) provided in each of said footwear (4). The groove (40) may be part of the sole (43) made of rubber or plastic material, defining a rear opening of the same.

The action of the ring (22) is exerted on the rear part of the foot; in practice, the elastic reaction provided by the belts (2) determines and / or facilitates the lifting of the heel. The lifting of the heel causes the proper contact of the foot with the ground (with the area of the metatarsus). This feature has a great importance in the use in the field of rehabilitation of the
present invention. Even people affected by movement deficits (such as, for example, in the case of sclerosis) can walk with greater ease. In other words, with the present invention, it is obtained a facilitation in the lifting of the leg that determines, in "automatic", a flexion of the leg and the consequent proper foot contact with the ground, also thanks to the lifting of the heel.

As shown in Fig. 9 the footwear (4) are provided with means for locking the closed ring (22) adapted to prevent the dissociation between said lower end (20) and the shoe (4). Such means can be constituted by a collar (44) that wraps around the back of the shoe (4). To fix the collar (44) to the shoe may be provided snap fasteners, Velcro, or other releasable fastening means.

Furthermore, as shown in Fig. 12, the shoe can be provided with a wedge (41) or similar filler element, adapted to be inserted into the groove (40). The wedge (41) can be used to use the shoe (4) when the shoes (4) are not worn with the trousers (3) to constitute a pair of shoes for common use. The wedge (41) can also be used to lock the ring (22) as an alternative of the collar (44).

In accordance with the invention, in an embodiment which does not require the use of "dedicated" shoes, a garment to allow the execution of gymnastic exercises exploiting the elastic reaction of extensible elements comprises: a pair of elastic straps (2), having a distal or bottom end (20) and a proximal or upper end (21); said lower end (20) being provided with a closed ring (22) adapted to be fitted directly or indirectly on a portion of the user's foot and a garment worn by the user comprising a pair of trousers (3) provided with a pair of channels (32), extending along both legs of the trousers (3), in which are inserted the said elastic straps (2), and fastening means for said proximal end (21) of the belts (2) to the trousers (3).

For the realization of trousers (3) can be used woven fabrics of a known type, for example cotton or other fibers, and in particular of type jeans, also elasticized. The trousers will be equipped with suitable reinforcing elements (33) such as, for example, reinforced seams, bar tacks, etc.. In the drawings, different types of reinforcement are marked with the reference (33).

For the straps (2) good results have been obtained with rubber bands or particularly elastic fabric.

The shoes (4) are preferably of sporty type, with the sole (43) of plastic, rubber, etc..

In Figs. 13-21 is represented another possible embodiment of the invention, for which the same references have been used to indicate corresponding parts. Compared to the example previously described, are different, among other things, the material used for the trousers (3)
(which in this case is preferably elastically yielding, for example, lycra) and the means of fixing means to footwear (4); means which comprise snap fasteners (43), with a part (43a) fixed to the distal part (20) of the belt (2) and the other part (43b) fixed to the shoe (4) in correspondence of the rear part of the foot, above the heel. This particular means of association between shoes (4) and belts (20) is extremely effective from the functional point of view, both for the movement of the user, both for ease of fastening.

In fact, the positioning in the back of the foot determines a great facilitation of obtaining correct positioning of the foot in the contact phase on the ground. With the present invention, the elastic reaction provided by the belts (2) determines and/or facilitates the lifting of the heel. This feature has a great importance in the use of the present invention in the field of rehabilitation. Even people affected by motor deficits (such as, for example, in the case of sclerosis) can walk with greater ease. In other words, with the present invention it is obtained a facilitation in the lifting of the leg that determines, as expressed above, the leg flexion and the consequent proper foot support, also thanks to the lifting of the heel.

The trousers (3) shown in Figures 13-21 is provided with a drawstring closure (35) and loops (34) of considerable size, i.e. able to accommodate for long portions the belt (31). The belt (31) is provided with a buckle (37). On the belt (31), on the rear and in correspondence of the hips, are fit two loops (36) that support the buckles (23) which allow the adjustment of the length of the straps (2). A link is thereby realized between the straps (which, at the bottom, are attached to the footwear) and the belt.

Even in this case, the extensible elements are constituted by a pair of elastic straps (2), presenting a distal or bottom end (20) and a proximal or upper end (21). In particular, as best seen in Fig.21, the belt (2) may comprise the distal end (20) and proximal end (21) in non-elastic tape, and the central part (24) of elastic material. This particular configuration allows to obtain a considerable strength in the end zones, which are exposed, and a softness in the central zone (24), that remains inside the channel (32).

Even in this case the trajectory of the channels (32) with respect to the trousers (3) is a kind of slight curve, starting from the external area of the pant trousers, in correspondence of the sides, and which extends towards the rear of the leg. With this arrangement of the channels (32), the elastic reaction of the belts (2) does not affect the fit of the garment and the correct execution of the exercises. At the same time, the elastic straps can perform a slight sliding inside the channels making even more effective the execution of the exercises, without any prejudice to the wearability of the garment.
The details of execution may vary in any equivalent way as in the shape, dimensions, elements disposition, nature of the materials used, without leaving the scope of the adopted solution and thus remaining within the limits of the protection granted by this patent. Furthermore, the details of execution may vary in any equivalent way as in the shape, dimensions, elements disposition, nature of the materials used, without departing from the idea of solution adopted and therefore remaining within the limits of the protection granted by this patent.

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CLAIMS

1. Gymnic device or kit (1) for the execution of exercises exploiting the elastic reaction of extensible elements, characterized in that it comprises:
   - a pair of elastic straps (2), presenting a distal or bottom end (20) and a proximal or upper end (21);
   - a garment wearable by the user comprising a pair of trousers (3) provided with a pair of channels (32), extending along both legs of the trousers (3), in which are inserted said elastic straps (2), and fastening means for fixing said proximal end (21) of the straps (2) to the trousers (3); each of said channels (32) extending, from top to bottom, according to a curved path that starts from the external area of the trousers leg, in correspondence of the sides, and that extends towards the rear area of the leg;
   - a pair of shoes (4) provided with fastening means for said distal end (20) of said elastic straps (2).

2. Gymnic device according to claim 1, characterized in that said straps (2) are fixed to the shoe (4) in correspondence of a rear zone of the same, so as to determine the lifting of the heel with the elastic reaction of the straps (2).

3. Gymnic device according to claim 1, characterized in that it comprises means for adjusting the deformability of said straps (2) consisting of means (23) for adjusting the length of the portion of strap between the lower end (20), fixed to the shoe, and the upper end (21), fixed to the pants at the waist.

4. Gymnic device according to claim 3, characterized in that the adjustment means (23) of the length of the straps (2) comprise a buckle that holds said upper end (21) of each strap (2).

5. Gymnic device according to one of the preceding claims, characterized in that said distal or bottom end (20) of the straps (2) is provided with a half-part (43a) of a snap fastener (43) complementarily coupled with a corresponding half-part (43b) presented by the shoe (4).

6. Gymnic device according to one of claims 1 to 4, characterized in that said distal or bottom end (20) of the straps (2) is provided with a closed ring (22) adapted to wrap a portion of the user's foot directly around to the foot itself or, indirectly, by passing in a relative seat or groove (40) provided in each of said shoe (4).

7. Gymnic device according to claim 5, characterized in that each of said shoes (4) is provided with locking means of said closed loop (22) able to prevent the dissociation of said lower end (20) from the shoe (4).
8. Gymnic device according to claim 5, characterized in that each of said footwear (4) is provided with a wedge (41) or similar filler element, adapted to be inserted in said groove (40).

9. Gymnic garment for the execution of exercises exploiting the elastic reaction of extensible elements, characterized in that it comprises:
- a pair of elastic straps (2), having a distal or bottom end (20) and a proximal or upper end (21); said lower end (20) being provided with a fastening means (22; 43) connectable directly or indirectly to a rear portion of the user's foot;
- a garment wearable by the user comprising a pair of trousers (3) provided with a pair of channels (32), extending along both legs of the pants (3), in which are inserted the said elastic straps (2), and fastening means for said proximal end (21) of the belts (2) to the trousers (3); each of said channels (32) extending, from top to bottom, according to a curved path that starts from the external area of the trousers leg, in correspondence of the sides, and that extends towards the rear area of the leg;

10. Gymnic garment according to claim 9, characterized in that it comprises adjustment means (23) of the length of the straps (2) comprising a buckle that holds the said upper end (21) of each belt (2).

11. Gymnic garment according to claim 9, characterized in that the said distal or bottom end (20) of the belts (2) is provided with a half-part (43a) of a snap fastener (43) complementarily coupled with a corresponding half-part (43b) presented by a shoe (4) usable with the garment.

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INTERNATIONAL SEARCH REPORT

INTERNATIONAL APPLICATION No
PCT/IT2013/00212

A. CLASSIFICATION OF SUBJECT MATTER

INV. A63B21/00 A63B21/04 A63B21/055

A. ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELD SEARCHED

Minimum documentation searched (classification system followed by classification symbols) A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search

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Name and mailing address of the ISA/

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### DOCUMENTS CONSIDERED TO BE RELEVANT

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