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(54) **Method and device to ski correctly**

Verfahren and Vorrichtung zum korrekten Ski fahren

Procédé et dispositif de skier correctement

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Description

[0001] The invention relates to a method and a device to ski correctly.

[0002] Devices are known to be used in teaching skiing in order to improve the posture or skiing technique. An instructor explains the technique usually theoretically, but when running the skier need assistance and instructions in real time, or fails to correct his errors and/or apply the correct technique. U.S. 5,074,795 shows e.g. a guided method of teaching.

[0003] During the practical implementation of advanced or fast manoeuvres the instructor can not physically be at the side of the pupil, so portable devices are needed to assist the pupil while skiing. E.g. JP 4180782 proposes a sound or visible device that by means of sensors placed in the boots detects the posture of the skier, substantially the forward leaning, with respect to the ski and gives information. The device is limited to display to the skier or instructor a posture data, without requiring interaction with the skier and without getting any tangible and direct effect on skiing.

[0004] A similar device and method is disclosed in WO 2010/092414.

[0005] Another device, shown in U.S. 3,774,572, is a pneumatic acoustic alarm to be put between the legs of the skier in order to warn him/her if the legs are not parallel. The alarm is a cylindrical bellows designed properly long to cover the distance between an inner-thigh and the other, but it is so bulky that if moved elsewhere would be a hindrance or dangerous. It must be said that keeping the legs parallel with the feet on the same level during a curve is an antiquated system of skiing. Modern skis are waisted and curve by the sole displacement of the load on the outer leg. U.S. 3,774,572 does not promote the teaching of modern techniques because it ignores the load movements, and if the skier moves horizontally along a slope the device cannot be used because the feet and legs are not at equal heights.

[0006] The main object of the invention is to improve this state of the art by an aid/system/method that allows to teach a skier and/or to (make him) obtain a correct posture, i.e. load distribution, while skiing and cornering. The invention, that is, solves the problem of causing or facilitating the action of moving the loads correctly, that is distributing the weight on the skis, while cornering, especially when using waisted skis.

[0007] The method considers to use a reference member, preferably an acoustical or light signaller, which serves to favour and/or cause the correct position to take a turn well, i.e. to distribute the loads correctly. Between the knee and ankle of a skier there is arranged a reference, and the skier must lean to reach it, preferably to touch it, during the curve. For a beginner it is sufficient to bend up to the knee; for athletes or agonists, who make mistakes during the race too, pays to arrive up to the ankle because, although more difficult, the performance is dynamically better.

[0008] By moving to touch his leg the skier obtains and/or favours the technical effect of moving the loads in a way that ensures the correct movement.

[0009] When turning right the left leg should be touched, and this is also true in other sports such as mountain biking and motorbike. The same theory always applies: while taking a turn the force of gravity that attracts inwards to the curve must be overcome, so a balancing force must be exerted on the opposite leg (or side). For the inexperienced or fatigued or dulled-reflexes skier, this simple precept is not instinctive. Instead the invention ensures a practically automatic and safe control that the load is on the correct leg, because the skier, albeit exhausted and stunned, mechanically relies on and repeats the primitive rule of touching the reference on the correct leg. Besides, these days skiers are favoured by waisted skis: it is sufficient to put the weight on the outer leg to automatically cover the correct curve.

[0010] The advantages of the invention are notable mainly for inexperienced skiers with little assimilated technical, even though, it is known, at high speeds (close to 100 km/h) the automatisms even of a professional athlete change, to whom a reference can be needed just the same. It must be remembered that novice and understress skiers, especially on steep slopes or on the ice, begin to undistinguish between right and left, especially quite aged adults. The reflexes are dull, the movements thoughtless, and the skier throws himself to the center of the curve and falls to valley.

[0011] The reference member can activate a signal when it is touched, skimmed or approached by a hand of the skier. Thus generally it can incorporate a sensor capable of detecting the presence of a skier's hand between the knee and ankle, and a generator of a signal perceivable by the skier that is activated when the sensor detects the hand.

[0012] The generator can be an acoustic or light signaller, a vibrating means, or the like. The sensor can be a capacitive sensor, a proximity sensor, a photocell or the like.

[0013] The invention is also directed to a kit of parts comprising

(i) a device according to the invention or a variant thereof described here, wherein such device has a certain colour and is adapted to the application on one leg, and

(ii) a reference coloured member, capable of being hand-held or attached to the hand or wrist, the member being of the same colour of the device.

[0014] The kit already provides the correct number and type of accessories for the simplest execution of the correct skiing (see below).

[0015] The invention and its advantages will be even clearer from the following description of a preferred embodiment of device and method, illustrated in the drawing in which

Figure 1 shows a stylised skier while taking a curve;
Figure 2 shows the device in three-dimensional view;
Figure 3 shows a cross-section of the device in Fig. 2 according to the plane III-III;
Figure 4 shows a variant of the device of Fig. 2;
Figure 5 shows a second variant of the device of Fig. 2;
Figure 6 shows a stylised skier during a curve performed with the device and method.

[0016] Figure 1 shows a skier S with skis SK while executing a curve on a slope P. the skier S has the intention to curve to his left, see arrow T. To do this properly, he must shift his weight to the right to exert a force (arrow F) winning that of gravity which tends to make him fall inwards to the centripetal turn. As mentioned above, the novice skiers or tired people very often fail to do so automatically or instinctively.

[0017] According to the concept of the invention, each leg of the skier is equipped with a device or reference as in Fig. 6. The skier S leans to touch the reference opposite to the direction to take in the curve and automatically he distributes the load properly on skis SK. The load stabilization while curving can also occur unconsciously, but it is sufficient that skier veers without falling. With experience and exercise the automatisms of the technique will refine, and the skier will rely on the device only in cases of excessive strain or path difficulty.

[0018] The above device can take many forms, from a simple graphic and/or coloured display to be reached by the hand, to sophisticated electronic devices. Some variants are described below.

[0019] In Fig. 2 device 10 is shown according to the invention. It comprises a strap or belt 30, lockable by a closure 32 which supports a sealed envelope or sheath 20. Inside the sheath 20 there is a pneumatic acoustical adviser 24, of the bellows-type that one just presses to generate a sound. The sheath 20 is made by folding and welding a sheet of plastic to form a pocket, then the adviser 24 is inserted into it and the last side is welded. This avoids inlet of water or snow, which icing would damage the device. The device 10 is to be fixed to the leg of the skier by the belt 30, between the knee and ankle, placing the sheath 20 on the outer side of the leg.

[0020] A mechanical signalling device is generally preferred because it is practically insensitive to cold, shock and water. Electronic equipment, which gives better performance, can also be used but it is more expensive to produce reliably.

[0021] Fig. 3 shows a variant of the device 50. The strap or belt 30 is optional, being enough an attachment means to the leg of the skier. The envelope or sheath 20 may be equipped with a Velcro layer 26, and be fixed detachably to the ski suit. Or, as in Fig. 5, only the adviser 24, without envelope, can be equipped with a Velcro layer 28 and then attached the skier.

[0022] Clearly many variations can be envisaged. The warning device may emit when touched sound and/or light signals and/or any sensation noticeable by the skier, e.g. a vibration.

[0023] The adviser device can be applied over the skier's clothing or permanently inserted in them, e.g. in ski boots or trousers suit, e.g. by making proper surface pockets to house it. The adviser device can comprise a radio transmitter to alert the instructor or a central headquarters about the skier's behaviour while skiing or racing by sending the information about if and when the skier has touched the device.

[0024] A further improvement is obtained by colouring the device 10 in a different way for each leg, for example red on one and blue on the other. The different colour has the effect of improving the discernment of right and left through visual association with the colour, and thus improves the performance of the exercise. Conveniently the skier can be equipped with a coloured reference member for the hands, e.g. a glove or a bracelet or a ribbon, with the same or similar colour to that on the corresponding leg. In this way the automatism during skiing becomes the association in motion of colours (and the relevant physical movement to touch the objects of the same colour), much less mentally demanding then thinking about right or left.

Claims

1. Method to teach and/or induce the correct position to take during a turn made on skis, comprising:

   - providing externally between the knee and ankle of a skier (S) a reference member (10, 50, 60), so that a skier by leaning to reach the reference member performs the curve correctly.

2. Method according to claim 1, wherein the reference member comprises a signaller (10, 50, 60) activated by manual contact and capable to produce a sensation to be felt by the skier, so that the skier by leaning to touch and activate the signaller performs the curve correctly.

3. Method according to claim 1 or 2, wherein the signaller (10, 50, 60) emits an acoustical and/or light signal.

4. Method according to claim 1 or 2 or 3, wherein the device is provided with a different colour for each leg.

5. Method according to claim 1 or 2 or 3 or 4, wherein for the hands the skier is provided with a coloured reference member having a colour equal to the corresponding leg.

6. Use of a reference member (10, 50, 60) or an acoustic and/or luminous warning device applied externally between the knee and ankle of a skier (S) to teach

and/or induce the correct position to take during a curve made on skis through the correct displacement of the load that occurs when the skier bends to touch the reference member.

7. Device (10, 50, 60) to be used in the teaching of skiing, comprising a sensor (24) capable of detecting the presence of a skier's hand between the knee and ankle, and
a generator (24) of a signal perceivable by the skier that is activated when the sensor detects the hand, and
a fastener (30) adapted to removably fasten the sensor to the skier's leg between the knee and ankle.

8. Device according to claim 7, wherein the generator and the sensor consists of a pneumatic signaller (24) capable of emitting an acoustic signal when pressed.

9. Device according to claim 8, comprising a housing (20) that encloses the pneumatic signaller (24), the fastener being capable of removably fastening the housing to the skier's leg between the knee and ankle.

10. Device according to claim 7 or 8 or 9, in which the fastener comprises a layer of Velcro (26).

11. Device according to claim 7 or 8 or 9 or 10, wherein the sensor comprises one of the group consisting of a capacitive sensor, a proximity sensor, and a photocell.

12. Kit of parts comprising

(i) a device according any one of the claims 7 to 11 which has a certain colour and is adaped to be arranged on a leg, and
(ii) a coloured reference member, adapted to be held in hand or to be tied to a hand or a wrist, having same colour as the device's.

13. Ski boot, or ski pants or ski suit, equipped in the outward part that covers the leg from the knee to the ankle with a reference member or an acoustic and/or luminous signaller, in order to teach the skier and/or induce the correct position to take during a turn made on skis through the correct displacement of the load that occurs when the skier bends to touch/reach the reference member.

Patentansprüche

1. Methode zum Lehren und/oder zum Anregen der Einnahme einer korrekten Position beim Fahren einer Kurve mit Skiern, die folgendes beinhaltet

- außen wird zwischen Knie und Knöchel des Skifahrers (S) ein Referenzelement (10; 50; 60) so angebracht, dass sich der Skifahrer beugen muss um das Referenzelement zu erreichen und so die Kurve richtig ausführt.

2. Methode nach Anspruch 1, bei der das Referenzelement einen Signalgeber (10; 50; 60) umfasst, der durch den Kontakt mit der Hand aktivierbar und in der Lage ist, eine vom Skifahrer wahrnehmbare Empfindung zu produzieren, sodass sich der Skifahrer beugt um den Signalgeber zu berühren und zu aktivieren und auf diese Weise die Kurve korrekt ausführt.

3. Methode nach Anspruch 1 oder 2, bei welcher der Signalgeber (10; 50; 60) ein akustisches und/oder Leuchtsignal abgibt.

4. Methode nach Anspruch 1 oder 2 oder 3, bei welcher die Vorrichtung für jedes Bein andersfarbig ist.

5. Methode nach Anspruch 1 oder 2 oder 3 oder 4, bei welcher der Skifahrer mit einem farbigen Referenzelement ausgerüstet wird, wobei Hand und übereinstimmendes Bein die gleiche Farbe haben.

6. Nutzung eines Referenzelements (10; 50; 60) oder einer akustischen und/oder leuchtenden Meldeeinrichtung, die außen zwischen Knie und Knöchel des Skifahrers (S) angebracht wird, um ihm die korrekte Position beizubringen und/oder nahe zu legen, die beim Fahren einer Kurve mit den Skiern einzuhalten ist, was durch eine korrekte Gewichtsverlagerung erfolgt, wenn sich der Skifahrer beugt um das Referenzelement zu berühren.

7. Vorrichtung (10; 50; 60), die beim Skiunterricht zu verwenden ist und folgendes beinhaltet
einen Sensor (24), der dazu dient die Präsenz der Hand eines Skifahrers zwischen Knie und Knöchel zu erfassen, und
einen Signalgenerator (24), der ein vom Skifahrer wahrnehmbares Signal generiert und dann aktiviert wird, wenn der Sensor die Hand erfasst, und
ein Befestigungselement (30), das dazu dient den Sensor am Bein des Skifahrers zwischen Knie und Knöchel abnehmbar festzumachen.

8. Vorrichtung gemäß Anspruch 7, bei der Generator und Sensor aus einem pneumatischen Signalgeber (24) bestehen, der dazu in der Lage ist ein akustisches Signal abzugeben, wenn er gedrückt wird.

9. Vorrichtung gemäß Anspruch 8, die eine Hülle (20) umfasst, die den pneumatischen Signalgeber (24) beinhaltet, sowie das Befestigungselement, das dazu dient die Hülle am Bein des Skifahrers zwischen

Knie und Knöchel abnehmbar festzumachen.

10. Vorrichtung gemäß Anspruch 7 oder 8 oder 9, bei der das Befestigungselement einen Klettverschluss (26) beinhaltet.

11. Vorrichtung gemäß Anspruch 7 oder 8 oder 9 oder 10, bei welcher der Sensor einer der folgenden ist: kapazitiver Sensor, Näherungssensor, Fotozelle.

12. Teile-Set, das folgendes beinhaltet

(i) eine Vorrichtung gemäß einer der Ansprüche von 7 bis 11, die eine bestimmte Farbe hat und dazu dient, an einem Bein angebracht zu werden, und
(ii) ein farbiges Referenzelement, das in der Hand gehalten oder an die Hand bzw. ans Handgelenk gebunden wird und die gleiche Farbe wie die Vorrichtung hat.

13. Skischuh, oder Skihose oder Skianzug, die an der Außenseite, die das Bein vom Knie bis zum Knöchel bedeckt, mit einem Referenzelement oder einer akustischen und/oder leuchtenden Meldeeinrichtung versehen sind, um dem Skifahrer die korrekte Position beizubringen und/oder nahe zu legen, die beim Fahren einer Kurve mit den Skiern einzuhalten ist und zwar durch eine korrekte Gewichtsverlagerung, die dann erzielt wird, wenn sich der Skifahrer neigt um das Referenzelement zu berühren/erreichen.

Revendications

1. Méthode pour enseigner et/ou induire la bonne position à prendre sur les skis pendant un virage, comprenant

- prévoir, extérieurement, entre le genou et la cheville d'un skieur (S) un élément de référence (10, 50, 60), de manière à ce que, en s'inclinant pour atteindre cet élément de référence, le skieur effectue correctement le virage.

2. Méthode selon la revendication 1, dans laquelle l'élément de référence comprend un dispositif de signalisation (10, 50, 60) activable par contact manuel et capable de procurer une sensation pouvant être ressentie par le skieur, de sorte que celui-ci, en s'inclinant pour toucher ce dispositif et l'activer, effectue correctement le virage.

3. Méthode selon la revendication 1 ou 2, dans laquelle le dispositif de signalisation (10, 50, 60) émet un signal sonore et/ ou lumineux.

4. Méthode selon la revendication 1 ou 2 ou 3, dans laquelle on donne au dispositif une couleur différente pour chaque jambe.

5. Méthode selon la revendication 1 ou 2 ou 3 ou 4, dans laquelle on équipe le skieur d'un élément de référence coloré pour les mains, d'une couleur identique à celle de la jambe correspondante.

6. Utilisation d'un élément de référence (10, 50, 60) ou d'un avertisseur sonore et/ou lumineux appliqué extérieurement, entre le genou et la cheville du skieur (S), pour enseigner et/ou induire la bonne position à prendre sur les skis pendant un virage, moyennant le déplacement correct de la charge qui se produit quand le skieur s'incline pour toucher l'élément de référence.

7. Dispositif (10, 50, 60) à utiliser dans l'enseignement du ski comprenant
un capteur (24) capable de détecter la présence de la main du skieur entre le genou et la cheville, et
un générateur de signal (24) pouvant être perçu par le skieur, qui s'active quand le capteur détecte la main et
un élément de fixation (30) capable de fixer de manière amovible le capteur à la jambe du skieur entre le genou et la cheville.

8. Dispositif selon la revendication 7, où le générateur et le capteur consistent en un dispositif de signalisation pneumatique (24) capable d'émettre un signal sonore lorsqu'on appuie dessus.

9. Dispositif selon la revendication 8, comprenant un logement (20) contenant le dispositif de signalisation pneumatique (24), l'élément de fixation étant capable de fixer de manière amovible le logement sur la jambe du skieur entre le genou et la cheville.

10. Dispositif selon la revendication 7 ou 8 ou 9, où l'élément de fixation comprend une couche de velcro (26).

11. Dispositif selon la revendication 7 ou 8 ou 9 ou 10, où le capteur est l'un des suivants : capteur capacitif, capteur de proximité, cellule photo-électrique.

12. Kit de parties comprenant

(i) un dispositif selon une des revendications de 7 à 11, qui a une certaine couleur et sert à l'application sur une jambe, et
(ii) un élément de référence coloré, pouvant être tenu en main ou lié à une main ou à un poignet, d'une couleur identique à celle du dispositif.

13. Chaussure de ski, ou pantalon de ski ou combinai-

son de ski, équipés dans la partie extérieure qui couvre la jambe du genou à la cheville d'un élément de référence ou d'un dispositif de signalisation sonore et/ou lumineuse, afin d'enseigner au skieur et/ou d'induire la bonne position à prendre sur les skis pendant un virage, moyennant le déplacement correct de la charge qui se produit quand le skieur s'incline pour toucher/atteindre l'élément de référence.

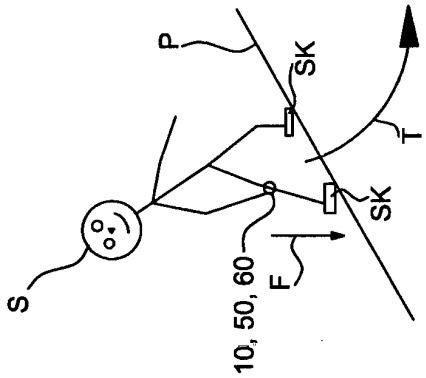


Fig. 6

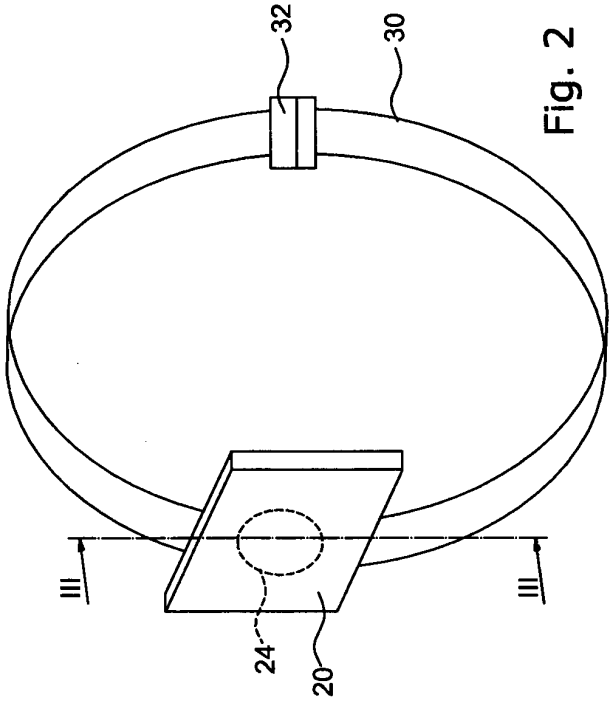


Fig. 2

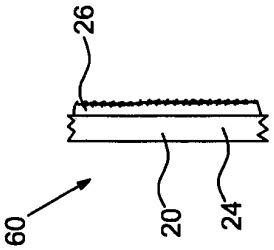


Fig. 5

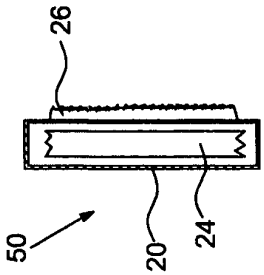


Fig. 4

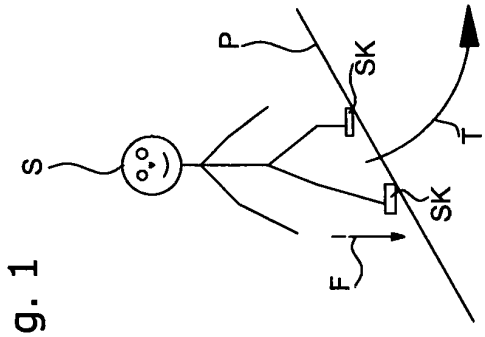


Fig. 1

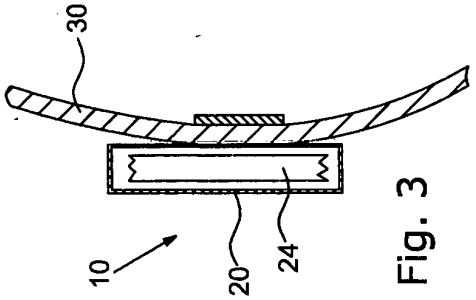


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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