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

(57) To allow a skier to make a turn well a method is described 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.

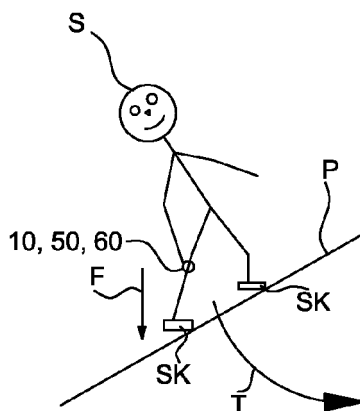


Fig. 6

Description

[0001] 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.

[0002] 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.

[0003] 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.

[0004] 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.

[0005] 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.

[0006] 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.

[0007] 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.

[0008] 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 under-stress 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.

[0009] 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.

[0010] 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.

[0011] 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.

[0012] The kit already provides the correct number and type of accessories for the simplest execution of the correct skiing (see below).

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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.

[0020] 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.

[0021] 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.

[0022] 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 than 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. 5
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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. 15
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. 20
10. Device according to claim 7 or 8 or 9, in which the fastener comprises a layer of Velcro (26). 25
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. 30
12. Kit of parts comprising
 - (i) a device according any one of the claims 7 to 11 which has a certain colour and is adapted to be arranged on a leg, and 35
 - (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. 40
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Fig. 1

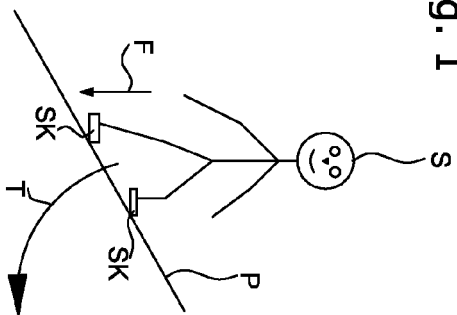


Fig. 3

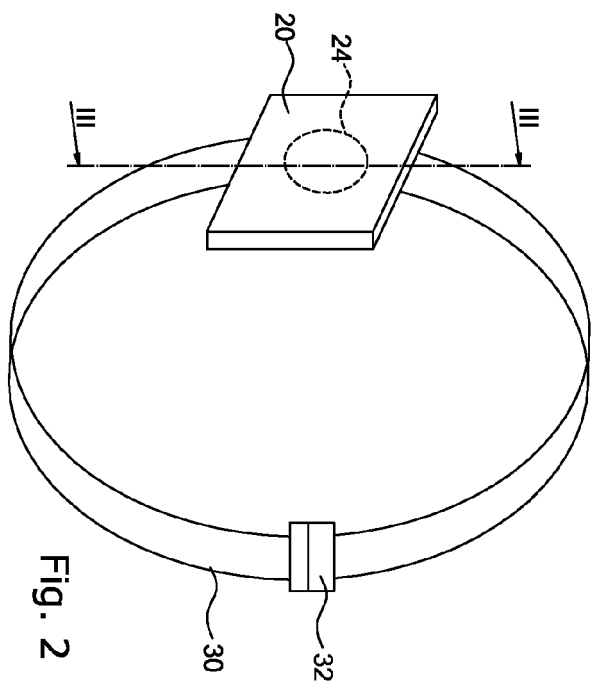
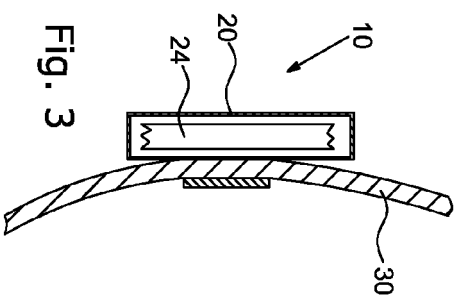


Fig. 2

Fig. 4

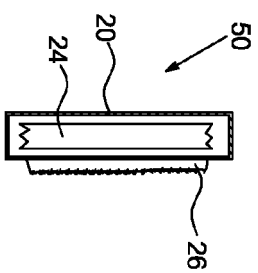


Fig. 5

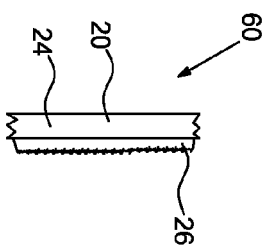
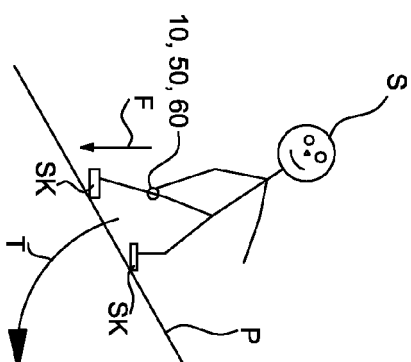


Fig. 6





EUROPEAN SEARCH REPORT

Application Number
EP 11 18 5522

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2010/092414 A1 (MILLAR ANDREW [GB]; GLEESON FERGUS [GB]) 19 August 2010 (2010-08-19) * page 1 - page 3; figure 1 *	1-13	INV. A63B69/18
A	WO 03/068339 A1 (WORRALL CHRISTOPHER [GB]; BRAISBY CHRISTOPHER [GB]) 21 August 2003 (2003-08-21) * page 1 - page 24; claims 1-43; figures 1-9 *	1-13	
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A	US 3 644 919 A (MATHAUSER WILLIAM R) 22 February 1972 (1972-02-22) * column 2 - column 5, line 27; claims 1-32; figures 1-9 *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63B A63C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 23 February 2012	Examiner Oelschläger, Holger
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 11 18 5522

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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23-02-2012

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REFERENCES CITED IN THE DESCRIPTION

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