A swimming/sports head protection device for protecting a user’s head from an impact. The head protection device is made of a rigid and resilient material.
SPOR TS/ SWIMMING HEAD PROTECTION DEVICE

FIELD OF THE INVENTION

[0001] The present invention is directed to a sports head protection device, in particular a sports cap device or swimming cap device configured to protect a user’s head while training, playing or competing in sports, in particular swimming.

BACKGROUND OF THE INVENTION

[0002] There exist many sports in which there is a likelihood or even probability of a head injury during practice or competition. Depending on the age and playing level of the particular sport, head protection or headgear such as a sports helmet or cap is used. For example, in high school football and baseball, helmets or caps are typically used during batting in baseball, and during practice and competition in football. Also, headgear is typically worn during practice and competition in lacrosse. However, there exist many other popular sports where no head gear is utilized during practice or even competition such as soccer, field hockey, track, cross-country, tennis, gymnastics mainly due to the lower probability of head injuries combined with discomfort and visual impairment and restrictions to mobility of the head while wearing a helmet or cap in such sports.

[0003] In swimming, in particular during performing freestyle and backstroke strokes, there exists a high probability of head injury when approaching a wall of the pool, and/or during a flip turn or back flip turn. Specifically, there exist numerous incidents of swimmers hitting their heads, in particular the back of their heads into the wall or wall edge of the pool when attempting to swim to the wall to complete a lap, or swim into the wall to perform a back flip type flip turn to continue swimming another lap. In some circumstances, the swimmer only receives a bump on their head, however, there exist many incidents where the swimmer receives a significant or even severe head injury such as skull fractures or even neurological damage. The lateral area of the temporal bone is more susceptible to injury during sports, in particular swimming, and the major concern is the passage of the middle meningeal artery through the temporal bone in the area anterior or superior to the ear.

[0004] Thus, there exists a need for a light weight, unrestrictive, unobtrusive, comfortable and effective head protection helmet, cap or otherwise headgear that can be worn in a wide variety of sports during both practice and competition. The head protection needs to be conducive to wear by athletes, and must also be effective to prevent or minimize head injuries.

SUMMARY OF THE INVENTION

[0005] A first object of the present invention is to provide a sports head protection device for use during training or playing sports, in particular swimming.

[0006] A second object of the present invention is to provide a sports head protection device that is lightweight in construction and unobtrusive while still being effective for protecting the head against injuries.

[0007] A third object of the present invention is to provide a sports head protection device including a rigid and lightweight construction.

[0008] A fourth object of the present invention is to provide a sports head protection device including a rigid plate construction.

[0009] A fifth object of the present invention is to provide a sports head protection device including a rigid layer.

[0010] A sixth object of the present invention is to provide a sports head protection device including a rigid insert.

[0011] A seventh object of the present invention is to provide a sports head device including a sports cap including a rigid head protection portion.

[0012] An eighth object of the present invention is to provide a sports head protection device including a soft and pliable cap in combination with a rigid head protection portion.

[0013] A ninth object of the present invention is to provide a sports head protection device including a soft and pliable cap provided with a rigid plate connected to a surface of the cap.

[0014] A tenth object of the present invention is to provide a sports head protection device including a soft and pliable cap in combination with a rigid insert configured and located to protect a portion or portions of a user’s head.

[0015] The present invention is directed to a sports head protection device. The sports head protection device according to the present invention can be configured as a cap, helmet, headgear or other type of head protection. In one preferred embodiment, the sports head protection device includes a rigid helmet or cap portion to cover particular areas of the head. In another preferred embodiment of the present invention, the sports head protection device includes a cap, preferably a soft pliable cap, in combination with a reinforcement device such as a rigid and resilient plate, a rigid plate, a rigid portion, a hard portion, a rigid insert, a hard insert, a rigid layer, a hard layer or other protecting structure or construction having sufficient structural strength and capable of protecting the head. Preferably, the reinforcement layer or component is both rigid and resilient to allow the sports head protection device to be fitted to a user’s head. Further, the reinforcement layer is made of a material being both rigid and hard to spread impact energy over a larger surface area of the user’s head.

[0016] A preferred embodiment of the sports head protection device according to the present invention is lightweight in construction, comfortable to wear, and provides a suitable level of head protection. The sports head protection device according to the present invention preferably at least partially grips a portion or portions of the head so as to remain on the user’s head during use. In a preferred embodiment, the sports head protection device according to the present invention grips opposed portions of the user’s head during use to retain the sports head protection device on the user’s head during sports practice, playing or competition. For example, the sports head protection device according to the present invention can be made with a skull cap portion and a back portion that grips opposed positions on the front and back of the head in combination with two (2) side lobe portions extending downwardly from the skull cap portion that grip opposed side positions on the user’s head. In this manner, the user’s head is snugly captured and nests within the sports head protection device during use.

[0017] The sports head protection device grips the user’s head by portions of the device resiliently bending or bowing outwardly while fitting the sports head protection device on the user’s head. For example, the back portion and the side lobe portions are bowed outwardly by the shape of the user’s
head (i.e. head surface acting as a ramp to bend or bow outwardly and/or side lobe portions when pushing the sports head protection device downwardly or toward the neck). The resilient material of the sports head protection device and/or resilient construction of the sports head protection device allows for the back portion and side lobe portions to resiliently bend or bow outwardly for fitting or removing the sports head protection device onto or off the user's head.

[0018] Optionally, one or more straps can be added to the sports head protection device (e.g., chin strap, jaw strap, lower rear head strap, and/or side straps) to further maintain and hold the sports head protection device on the user's head during training, play, or competition.

[0019] In a preferred embodiment, a soft portion, soft insert, soft shell, soft layering and/or a layer of separate or intercommunicating liquid (e.g., water) or gas (e.g., air) receptacle(s) or compartments designed to absorb energy on impact, is combined with a rigid shell (e.g., outer rigid shell) to provide an additional layer of protection to absorb impact energy and soften the blow to the head by an impact, and to make the sports head protection device more comfortable to wear. This configuration provides two (2) layers of protection.

[0020] In another preferred embodiment, a rigid shell is layered between a soft inner layer and a soft outer layer or two (2) soft layers are provided on a rigid inner shell to provide three (3) layers of protection. In a more complex version of the sports head protection device according to the present invention, numerous layers, four to ten layers (e.g., composite of many different material is same layer or different layers) can be fabricated to make the sports head protection device. The shell, for example, can be made of a hard rigid material such as a metal layer, hard plastic (e.g., polyethylene, polypropylene, ABS, PVC), fiber glass, Kevlar, graphite, carbon fiber, composite material, ceramic layer, or some other suitable lightweight strong material(s) capable of being formed into a shell configured to fit on the user's head.

[0021] The soft layers (e.g., inner layer, middle layers, and/or outer layer) can be provided by a foam layer, foam rubber layer, plastic layer, sponge layer, rubber layer, cloth layer, and/or a layer of separate or intercommunicating liquid and/or gas receptacles or compartments, or provided by another suitable soft material. The soft layer can be applied by layering, molding, bonding, adhering, cementing, heat bonding, thermal bonding, mechanical fastening, spraying, forming, dipping and/or other suitable methods of applying a soft layer to a rigid shell. In most instances, the rigid shell provides the shape and structural strength for protecting the head from damaging impact.

[0022] A swimming version of the sports head protection device according to the present invention utilizes materials suitable for use in a water environment. The materials preferably are non-absorbent and/or encased in non-absorbent material(s), and can withstand the application of water and other chemicals (e.g., chlorine, bromine) normally found and utilized in swimming pools without short term or long term degradation effects. In some embodiments, the materials may be configured with pores or other energy absorbing structure on the surface thereof.

[0023] The swimming sports head protection device according to the present invention includes a skullcap portion covering the upper, sides, and rear portions of the user's head. A back portion extends downwardly from the skullcap portion along back portion of the user's head toward the neck. The swimming sports head protection device according to the present invention is configured to protect in particular the top, sides, and back of the user's head from impact with the wall and/or edge of the wall of the pool when the user is attempting to approach the wall, and/or conduct a flip turn while swimming freestyle or backstroke, or a back flip turn while swimming backstroke. This type of impact and resulting injury is very common for swimmers doing backstroke and approaching the wall of the pool blindly.

[0024] The swimming sports head protection device according to the present invention is specifically configured and arranged to protect the user's head from injury, in particular severe head injury upon impact with the wall or edge of the wall of the pool. Again, however, the swimming sports head protection device according to the present invention must be suitable for use during practice, play, and competition, and thus must properly fit the user's head and remain on securely during training or competition.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] FIG. 1 is a side elevational view of a preferred embodiment of the sports head protection device according to the present invention shown on a user's head as indicated in ghost image.

[0026] FIG. 1A is a vertical longitudinal cross-sectional view through the sports head protection device shown in FIG. 1 showing the forces applied by the sports head protection device on the user's head.

[0027] FIG. 2 is a front elevational view of the sports head protection device shown in FIG. 1.

[0028] FIG. 2A is a front elevational view of the sports head protection device shown in FIG. 1 shown worn on a user's head.

[0029] FIG. 3 is a rear elevational view of the sports head protection device shown in FIG. 1 without the user's head shown in ghost image.

[0030] FIG. 4 is a side elevational view of the sports head protection device 10 shown in FIG. 1 worn on a user's head.

[0031] FIG. 5 is a partial broken away cross-sectional view of an upper portion of the sports head protection device shown in FIG. 1.

[0032] FIG. 6 is a partial broken away cross-sectional view of an upper portion of a sports head protection device according to the present invention having a modified construction.

[0033] FIG. 7 is a partial broken away cross-sectional view of an upper portion of a sports head protection device according to the present invention having a modified construction.

[0034] FIG. 8 is a partial broken away cross-sectional view of an upper portion of a sports head protection device according to the present invention having a modified construction with soft outer and inner layers.

[0035] FIG. 8A is a partial broken away cross-sectional view of an upper portion of a sports head protection device according to the present invention having a further modified construction with a layer of intercommunicating compartments.

[0036] FIG. 8B is a partial broken away cross-sectional view of an upper portion of a sports head protection device according to the present invention having a further modified construction with a layer of separate or non-intercommunicating compartments.
FIG. 9 is a top planar view of the sports head protection device shown in FIG. 1, and modified to include additional protection layers at particular locations on the sports head protection device.

FIG. 10 is a side elevational view of the modified sports head protection device shown in FIG. 9, shown worn on a user's head.

FIG. 11 is a top planar view of the sports head protection device shown in FIG. 1, and further modified to include additional protection layers at particular locations on the sports head protection device.

FIG. 12 is a side elevational view of the sports head protection device shown in FIG. 11 shown worn on a user's head.

FIG. 13 is a sequence of two (2) side elevational views of the sports head protection device shown in FIG. 1 showing the back portion being biased outwardly for fitting the sports head protection device onto the user's head.

FIG. 14 is a sequence of two (2) rear elevational views of the sports head protection device shown in FIG. 1 showing the lobe portions resiliently bent outwardly for fitting the sports head protection onto the user's head.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

A preferred embodiment of the sports head protection device 10 according to the present invention is shown in FIGS. 1-4. The sports head protection device 10 can be used as a swimming sports head protection device.

The sports head protection device 10 is shown having a unitary construction. However, the sports head protection device 10 can be made of separate components or parts and assembled into a single unit. In a preferred embodiment, the sports head protection device 10 is made from a substantially hard and resilient plastic material such as polyethylene, polypropylene, ABS, fiberglass, Kevlar, graphite, carbon fiber, composite, or other suitable hard resilient material. The material used to make the sports head device 10 can be molded, injection molded, vacuum formed, heat formed, machined, laid up, or made by some other suitable fabrication technique.

The sports head protection device 10 is a cap 11, including a skullcap portion 12, a pair of opposed side lobe portions 14, 14, and a back portion 16.

The sports head protection device 10 covers an upper portion of the user's head, side portions of the head, and a rear portion of the head. The sports head protection device 10 is preferably made of a hard material resilient enough to deform to allow the sports head protection device 10 to be fitted onto the user's head, and then be retained thereon and withstand sports practice, playing, or competition. More specifically, the sports head protection device 10 resiliently deforms when fitting the sports head protection device 10 onto the user's head so that the sports head protection device 10 then resiliently grips one or more portions, preferably multiple opposed portions, of the user's head to retain the sports head protection device 10 on the user's head during sports practice, play, or competition. For example, the sports head protection device 10 is configured to resiliently grip and capture an upper portion of the user's head between front/back and side/side opposed portions and positions on the user's head.

As shown in FIG. 1A, the upper portion of the user's head is captured between the front edge 12a of skullcap portion 12 and the rear edge 16a of the back portion 16a, which edges exert an inwardly force F₁ at two (2) separate and spaced apart front/back opposed points or portions (i.e. two point longitudinal connection) of the user's head along a central longitudinal axis of the sports head protection device 10. As shown in FIG. 2A, the sports head protection device 10 exerts inwardly directed forces F₂, F₃ on separate and spaced apart side/side opposed points or portions (i.e. two point lateral connection) of the user's head along a transverse axis of the sports head protection device 10. The combination of the inwardly directed forces F₂, F₃ securely capture an upper portion of the user's head within the sports head protection 10 in a resilient manner. This arrangement provides a four (4) point connection arrangement between the sports head protection device 10 and the user's head.

Further, the sports head protection device 10 is configured (e.g. sized or dimensioned) to be slightly less than the longitudinal and transverse dimensions of the user's head so that the longitudinal edges 12a, 16a and transverse edges 14a, 14b are biased slightly outwardly by the user's head when the sports head protection device 10 is being fitted onto the user's head. In this manner, the back portion 16 is bowed slightly outwardly and the lobe portions 14, 14 are also bowed slightly outwardly when fitting the sports head protection device 10 on the user's head, which portions then resiliently spring back and remain resiliently biased against portions of the user's head when fully fitted on the user's head. The front edge 12a of the skullcap portion 12 will bow to a lesser degree than the back portion 16 due to the front edge 12a being more rigidly supported by the skullcap portion 12 (i.e. shorter bending arm length). It is the bending resiliency of the various panels or portions of the sports head protection device 10 that flexibly and resiliently bow outwardly slightly relative to the skullcap portion 12 when the sports head protection device 10 is applied (i.e. force downwardly) onto the user's head.

The sports head protection device 10 can be tailored (e.g. by design, layering, providing rigid portions or inserts, shaping, and providing varying thickness) so that the sports head protection device 10 flexes or bows in various modes or manners. For example, a more center portion of the sports head protection device 10 (e.g. skullcap) can be made substantially more rigid (e.g. greater thickness) relative to thinner outer portions of the sports head protection device 10 (e.g. back portion 16 and side lobe portions 14) so that the back portion 16 and lobe portions 14, 14 can bow or flex outwardly when being applied to a user's head (i.e. by the shape of the user's head and/or by pulling outwardly by the user's fingers).

Alternatively, the sports head protection device 10 can be tailored so that the entire sports head protection device 10 throughout its length and width dimensions resiliently bows, flexes, or changes shape when being applied to a user's head to spread, for example, the gripping pressure applied by the sports head protection device 10 onto the user's head. The sports head protection device 10 can be tailored so that the sports head protection device 10 applies specific pressure points onto the user's head for effective gripping thereof. In any event, it is important that the sports head protection 10 is both comfortable to wear while also being well restrained on the user's head to withstand sports practice, play, or competition without substantial moving (e.g. rocking movement on longitudinal or traverse axes, sliding on users' head, and/or lifting off the user's head).

Optionally, one or more straps (e.g. chin strap, jaw strap, rear head strap, and/or side straps) can be applied to the
sports head protection device 10 to ensure that the sports head protection 10 is retained on the user’s head during practice, play, or competition.

[0052] Various constructions of the sports head protection device 10 according to the present invention are shown in FIGS. 5-8.

[0053] A preferred embodiment of a single layer or component sports head protection device 10 according to the present invention is shown in FIG. 5.

[0054] The sports head protection device 10 is heat formed (e.g., plastic plate is heat formed and cut to shape), injection molded (e.g., plastic device made of an injected molded plastic material such as polyethylene, polypropylene, ABS, polystyrene, or other suitable plastic material), or laid up (e.g., fiberglass, Kevlar, carbon fiber, graphite, composite fiber combined with resin).

[0055] A preferred embodiment of a two (2) layer or component sports head protection device 110 according to the present invention is shown in FIG. 6.

[0056] The sports head protection device 110 includes a first rigid and resilient layer 18 (e.g., made of hard resilient plastic) and a second inner soft layer 20 (e.g., made of a soft material such as foam material, foam rubber, soft plastic layer, soft synthetic polymer layer, sponge or other suitable soft energy absorbing material) to provide comfort to the wearer, absorb impact energy, and provide an additional layer of protection to the user’s head.

[0057] A preferred embodiment of a three (3) layer or component sports head protection device 210 according to the present invention is shown in FIG. 7.

[0058] The sports head protection device 210 includes a first rigid and resilient layer 18, second inner rigid and resilient layer 20, and third rigid and resilient outer layer 22. The additional third rigid and resilient layer spreads and diffuses impact energy reaching the resilient layer 18 and user’s head.

[0059] Another preferred embodiment of a three (3) layer or component sports head protection device 310 according to the present invention is shown in FIG. 8.

[0060] The sports head protection device 310 includes a first rigid and resilient layer 18, a second soft outer layer 22, and a third soft inner layer 20 made of a soft material (e.g., foam, foam rubber, plastic, vinyl, cloth, soft composite material). This arrangement provides soft outer surface and inner surface. The soft outer layer 22 provides protection to person’s other than the user in the event of collision between the user’s head and another person’s body, in particular their head.

[0061] A further preferred embodiment of a three (3) layer or component sports head protection device is shown in FIG. 8A.

[0062] In this embodiment, the soft inner layer 20 is made of made of intercommunicating compartments 24. The compartments 24 can be empty (i.e., void), or preferably filled with an energy absorbing material such as gas or combination of gases (e.g., air, nitrogen, helium, argon, carbon dioxide), a liquid or combination of liquids (e.g., water, hydrocarbon), a gel or combination of gels, and/or a powder or combination of powders. For example, the soft inner layer 20 can be a molded soft plastic resin bladder having a single compartment or multiple compartment bladders, and partially filled or completely filled with a gas, liquid, gel and/or powder. The soft inner layer 20 can be attached (e.g., adhered, fastened) to rigid and resilient layer 18.

[0063] An even further preferred embodiment of a three (3) layer or component sports head protection device is shown in FIG. 8B.

[0064] In this embodiment, the soft inner layer 20 is made of made of separate (i.e., non-intercommunicating) compartments 26. The separate compartments 26 can be empty (i.e., void), or preferably filled with an energy absorbing material such as gas or combination of gases (e.g., air, nitrogen, helium, argon, carbon dioxide), a liquid or combination of liquids (e.g., water, hydrocarbon), a gel or combination of gels, and/or powder or combination of powders. For example, the soft inner layer 20 can be a molded soft plastic resin bladder having a single compartment or multiple compartment bladders, and partially filled or completely filled with a gas, liquid, gel and/or powder. The soft inner layer 20 can be attached (e.g., adhered, fastened) to rigid and resilient layer 18.

[0065] In these preferred embodiments, additional layers beyond three (3) (i.e., four (4) or more) can be provided to tailor the sports head protection device to provide flexibility, resiliency, rigidity, softness, strength, impact strength, tensile strength, hardness, comfort, durability, structural strength, ergonomics, and other important parameters or characteristics of the user.

[0066] Another further preferred embodiment of the sports head protection device 410 according to the present invention is shown in FIGS. 9 and 10.

[0067] An even further preferred embodiment of the sports head protection device 410 includes the base sports head protection device 10 shown in FIGS. 1-4, in combination with additional panels or layers or 424a, b, c. These additional layers 424a, b, c can be made of the same and/or different materials. For example, the additional layers 424a, b, c can be applied to add layers of protection, hardness, softness or to provide other desired effects.

[0068] The additional layer 424a, b, c can be bonded, adhered, formed, molded, attached or otherwise made in the shape and size as shown and indicated. For example, the additional layer 424a provides extra protection and rigidity to the skullcap portion 412, the layers 424b can be added to provide additional impact protection for the lobe portions 414, 416, and the layer 424c can be added to provide extra impact protection to the back portion 416. The size, shape, thickness and other physical, chemical and/or engineering properties of the layers 424a, b, c can be tailored to provide extra protection to portions of the user’s head that are more delicate and susceptible to injury versus other portions of the user’s head.

[0069] An even further preferred embodiment of the sports head protection device 510 according to the present invention is shown in FIGS. 11 and 12.

[0070] The sports head protection device 510 includes the base sports head protection device shown in FIGS. 1-4 in combination with additional layers 426a, b, c, c, e, d, d. In this preferred embodiment, the additional layers 426a, b, c, c, e, d, d, are strips or strip layers applied in the manner as shown and indicated in the drawings. The additional layers 426a, b, c, c, e, d, d provide additional layers of protection to the base sports head protection device, and are located at positions most likely to be impacted.

[0071] In use, the sports head protection device 10 is applied to a user’s head, as shown in FIGS. 13 and 14.

[0072] As shown in FIG. 13, the lower edge 16a of the back portion 16 of the sports head protection device 10 is biased rearwardly, for example, by a user’s fingers to open the sports head protection 10 in the longitudinal direction thereof.
Alternatively, the user can apply the sports head protection device 10 by moving the sports head protection device 10 above the user's head so that the lower edge 16a of the back portion 16 engages an upper back portion of the user's head, which biases the back portion 16 rearwardly as the user pulls the sports head protection device downwardly to begin egress of the user's head into the sports head protection device 10.

As shown in FIG. 14, the user biases the edges 14a, 14c of the lobe portions 14, 14 outwardly, for example, by using the user's fingers, and then pulling the sports head protection device 10 downwardly so that the sports head protection device 10 is fully fitted onto the user's head. The lobe portions 14, 14 and back portion 16 resiliently bend or flex back to towards their unbiased positions or conformations to securely grip the user's head by the opposed forces F1, F1 and F2, F2, as shown in FIGS. 1A and 2A.

The sports head protection device 10 is sized and shaped that the back portion 16 and side lobe portions 14, 14 still remain slightly biased outwardly by the user's head even when fully fitted on the user's head so that the opposed front edges 12a and 16a and opposed side edges 14a, 14a remain biased against the user's head to provide securing or attachment to the user's head. In this manner, the inwardly directed opposed forces F1, F1 and F2, F2 are applied to the user's head by the lobe portions 14, 14 and front edge 12a of the skullcap portion 12 and the lower edge 16a of the back portion 16.

To remove the sports head protection device 10 from the user's head, the user grips the lower edges 14a, 14 of the lobe portions 14, 14, and lifts the sports head protection device 10 upwardly. The lower edge 16a of the back portion 16 rides upwardly and is biased slightly rearwardly by the back of the user's head acting as a ramp to release the user's head from the sports head protection device 10.

We claim:

1. A swimming/sports head protection device, comprising: a cap configured to cover at least a portion of an upper head portion, side, head portions, and back head portion of a user's head, said cap being made of a rigid and resilient material closely conforming to a shape and size of the user's head, said cap being configured to resiliently capture an upper portion of the user's head and resiliently grip the user's head by opposed spaced apart longitudinal gripping portions and opposed spaced apart transverse side gripping portions.

2. A swimming/sports head protection device, comprising: a cap configured to cover at least a portion of an upper head portion, side head portions, and back head portion of a user's head, said cap being made of a rigid and resilient material closely conforming to the shape and size of the user's head, said cap including a skull cap portion, a pair of side lobe portions, and a rear portion said cap configured to capture the user's head between a front edge of said skull cap portion and a lower edge of said rear portion along a longitudinal axis of said cap, said cap configured to capture the user's head between lower edges of said side lobe portions along a transverse axis of said cap.

3. A swimming/sports head protection device, comprising: a cap configured to cover at least a portion of an upper head portion, side head portions, and back head portion of a user's head, said cap being made of a rigid and resilient plastic material provided with an inner layer of a soft pliable material closely conforming to a size and shape of the user's head, said cap configured to grip the user's head between opposed spaced apart longitudinal portions of said cap and between opposed spaced apart transverse portions of said cap.

4. A cap device according to claim 1, wherein said head protection device includes at least one reinforcement panel provided as an upper surface of said cap.

5. A cap device according to claim 4, wherein said reinforcement panel is adhered to an inner soft layer of said cap.

6. A cap device according to claim 4, wherein said reinforcement panel is bonded to an inner soft layer of said cap.

7. A cap device according to claim 4, wherein said reinforcement panel is a reinforcement plate.

8. A cap device according to claim 4, wherein said reinforcement panel is a reinforcement layer.

9. A cap device according to claim 4, wherein said reinforcement panel is a reinforcement insert.

10. A cap device according to claim 7, wherein said reinforcement panel is contoured to the upper back portion of the user's head.

11. A cap device according to claim 10, wherein said reinforcement panel is adhered to an outer surface of said cap.

12. A cap device according to claim 7, wherein said cap is provided with a recess for accommodating said reinforcement plate and a recess to accommodate the user's hair.

13. A cap device according to claim 12, wherein said recess is provided in an outer surface of said cap.

14. A cap device according to claim 9, wherein said reinforcement insert is provided between an outer layer and inner layer of said cap.

15. A cap device according to claim 7, wherein said reinforcement plate is a rigid plate contoured to the upper back portion of the user's head.

16. A cap device according to claim 7, wherein said reinforcement plate is made of plastic material.

17. A cap device according to claim 16, wherein said plastic material is a rigid plastic material.

18. A cap device according to claim 7, wherein said reinforcement plate is made of plastic composite material.

19. A cap device according to claim 7, wherein said head protection device includes a cushion layer of intercommunicating compartments.

20. A cap device according to claim 7, wherein said head protection device includes a cushion layer of separate compartments.