A toy ball assembly that has an outer shell structure of a first material. Open areas are defined on the exterior of the outer shell structure. A supple core is disposed within the outer shell structure. The supple core can be felt through the open areas on the exterior of the ball. The supple core is softer than the outer shell structure. Thus, two different materials of differing softness can be present on the exterior of the ball. The supple core can be made from a transparent package that is filled with material. The supple core is therefore both interesting to both view and touch. The presence of supple material on the exterior surfaces of the ball makes the ball easier to grasp.
SUPPLE CORE SPORTS BALL AND ITS ASSOCIATED METHOD OF MANUFACTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

In general, the present invention relates to sports balls, such as footballs, that are thrown and caught during play. More particularly, the present invention relates to the materials and methods used in the construction of such sports balls.

2. Prior Art Description

Many sports utilize balls that are made to meet specific regulations. Such regulation balls are intended to be used in the official play of the game. For instance, there are regulation footballs, baseballs, basketballs and the like. The size, shape, weight-and materials used in the construction of such regulation balls are precisely controlled so that all the regulation balls in a particular sport perform the same during play.

However, many other balls are manufactured that mimic regulation sports balls in some aspect, but are not manufactured to official specifications. Such non-regulation balls are typically sold as toys and are used by children. Children often do not have the strength and skill needed to play with a regulation ball. For instance, it is nearly impossible for a child to throw a regulation football correctly because of the size of the child's hand in relation to the size of the ball. Toy balls offer safer and cheaper alternatives to regulation balls. Toy balls are often manufactured both smaller and softer than regulation balls so that they are better suited for use by children.

In the toy industry, non-regulation sports balls are widely manufactured. Many manufacturers load these toy balls with special features in an attempt to make the toy balls more appealing to children. Toy balls are made, in a countless variety of shapes and colors. Toy balls, such as footballs, that are intended to be thrown and caught, have been modified in many ways to increase the play value of the balls. Tails have been added to such balls in order to make the balls fly straight when thrown. Fins have been added to such balls to make the balls spiral when thrown. Whistles have been added to such balls so that they make sound when thrown.

Regardless of what features have been added to the exterior of such toy balls, the interior of such balls is generally the same. Toy balls typically have cores that are molded from a blown foam or a soft plastic. This allows the ball to be slightly squeezed when held. However, only the exterior of the ball is observed. The core does little else but provide structural shape to the toy ball.

The present invention is a toy ball having a supple inner core. The inner core is placed within a shell that allows the inner core to be both touched and observed. The result is a highly novel toy ball that is easier to grip and flies better than most solid core toy balls. The details of the present invention are described and claimed below.

SUMMARY OF THE INVENTION

The present invention is a toy ball assembly. The ball assembly has an outer shell structure of a first material. Open areas are defined on the exterior of the outer shell structure. A supple core is disposed within the outer shell structure. The supple core can be felt through the open areas on the outer shell structure. The supple core is softer than the outer shell structure. Thus, two different materials of differing softness can be present on the exterior of the ball.

The supple core can be made from a transparent package that is filled with material. The supple core is therefore both interesting to both view and touch. The presence of supple material on the exterior surfaces of the ball makes the ball easier to grasp. Consequently, the ball can be easily thrown and caught. The use of the supple core can also provide a gyroscopic effect to the ball when the ball is thrown, thereby making the ball easier to throw in a tight spiral.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, reference is made to the following description of exemplary embodiments thereof, considered in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of an exemplary embodiment of the present invention;
FIG. 2 is a cross-sectional view of the embodiment of the present invention shown in FIG. 1;
FIG. 3 is a cross-sectional view of an alternate embodiment of the present invention;
FIG. 4 is a cross-sectional view of a second alternate embodiment of the present invention;
FIG. 5 is a cross-sectional view of a third alternate embodiment of the present invention;

DETAILED DESCRIPTION OF THE DRAWINGS

Although the present invention ball can be configured as any sports ball, such as a soccer ball or baseball, the present invention is particularly well suited for use in the formation of toy footballs. Accordingly, the exemplary embodiment of the present invention will be configured as a football in order to set forth the best mode contemplated for the invention.

Referring to FIG. 1, there is shown a toy football 10. The toy football 10 has a shell structure 12 that has an oblong football shape. The shell structure 12 is made of a soft plastic or a molded foam, as will be later described in more detail. The shell structure 12 is not solid. The shell structure 12 is hollow and defines a central chamber 14. Open areas 16 are defined along the shell structure 12 that enables a person to see into the central chamber 14. The open areas 16 are disposed in either symmetrical patterns or other decorative patterns.

A supple core 20 is placed within the central chamber 14 of the shell structure 12. The supple core 20 is soft, relative the shell structure 12, and deforms more readily to the touch than does the material of the shell structure 12. The supple core 20 can be either a soft elastomeric gel or a bladder filled with a flowing material, as will later described in more detail. The supple core 20 is placed within the shell structure 12, wherein the supple core 20 is slightly compressed by the shell structure 12 and the supple core 20
deforms into the open areas 16 of the shell structure 12, therein filling the open areas 16 of the shell structure 12. Accordingly, when a person grasps the football, their hands will feel both the exterior of the shell structure 12 and the sections of the supple core 20 that protrude out of the open areas 16 in the shell structure 12.

[0020] Referring to FIG. 2, it can be seen that the shell structure 12 is made of a molded foam or similar traditional molded ball material. The supple core 20 in the shown embodiment has a bladder construction, wherein the supple core 20 is made of a liquid fill material 22 being disposed within a watertight package 24. The supple core 20 is wrapped around an inner core structure 26 that holds the supple core 20 in a generally cylindrical configuration. The inner core structure 26 is an inexpensive filler material, such as Styrofoam.

[0021] The supple core 20 is comprised of a watertight package 24 made from a transparent or translucent material. Although plastic sheeting can be used for the watertight package 24, the watertight package 24 is preferably made from a triblock copolymer. Such as poly(styrene-ethylene-butylene-styrene), poly(styrene-ethylene-propylene-styrene) or poly(styrene-ethylene-propylene-styrene). In this manner, the watertight package 24 is elastic as well as transparent.

[0022] The liquid fill material 22 within the watertight package 24 is free flowing and can be water, saline, oil or a low viscosity gel. Soft secondary objects 28 are disposed in the liquid fill material 22. The secondary objects 28 are a matter of design choice and can include glitter and molded plastic objects. In this manner, when the football 10 is observed, a person will see the supple core 20 through the open areas 16 of the shell structure 12. An observer will also be able to see into the supple core 20 and observe the secondary objects 28 flowing within the watertight package 24.

[0023] The presence of the supple core 20 provides advantages to the football 10. In addition to being both visually and tactfully interesting, the supple core 20 provides surfaces along the exterior of the football 10 that are very soft and yielding. This makes the football very easy to grip, especially by a child. The football 10 is therefore both easily thrown and caught by a child.

[0024] The supple core 20 contains liquid or gel. The supple core 20 is therefore more dense than the inner core structure 26. However, the supple core 20 surrounds the inner core structure 26. The football 10 is therefore more dense towards the periphery of the football 10 than it is towards the center of the football 10. The weight of the supple core 20, therefore, acts as a gyroscopic effect on the football 10. The weight of the supple core 20 helps the football 10 travel in a tight spiral and helps the football 10 maintain that spiral during flight.

[0025] Referring to FIG. 3, a first alternate embodiment of a football 31 is shown. In this embodiment, the shell structure 12 is the same as has been previously described and its components are referenced with the same reference numbers. However, in the embodiment of FIG. 3, there is no lightweight inner core. Rather, a supple core 30 is provided that fills the central chamber 14 of the shell structure 12 by itself. In such an embodiment, larger and more interesting secondary objects can be placed within the supple core 30, since the volume of the supple core 30 is increased.

[0026] In the embodiment of FIG. 3, the supple core 30 is comprised of a watertight package 34 that encases a plurality of soft secondary objects 36 that are mixed with a small volume of a lubricant. In this manner, the soft secondary objects 36 move past each other when the watertight package 34 is pressed. The soft secondary objects 36 can be silicon based or can also be made from an elastomeric gel.

[0027] Referring to FIG. 4, a second alternate embodiment of a football 41 is shown. In this embodiment, the shell structure 12 is the same as has been previously described and is referenced with the same reference numbers. In the embodiment of FIG. 4, there is also no lightweight inner core. Rather, the supple core 40 is provided that is bonded into the interior of the shell structure 12. The center of the football 41 therefore remains hollow. Such a structure is useful if the supple core 40 itself does not contain liquid, but is rather uniformly manufactured from an elastomeric gel. The elastomeric gel can be a silicone rubber or other synthetic rubber, but is preferably a triblock copolymer mixed with a plasticizing oil to create a stable soft gel. Secondary objects 42 can be molded into the elastomeric gel to make the elastomeric gel more interesting to view.

[0028] In the embodiments of the present invention shown in FIGS. 1-4, the shell structure is molded into multiple pieces and assembled around the supple core in order to complete the football assembly. Although this is easily done, the need for a multiple piece shell structure can be eliminated, if need be.

[0029] Referring to FIG. 5, an embodiment of a football 51 is shown having a primary body structure 50 that is molded from plastic, foam or a synthetic rubber. Deep depressions 52 are formed on the exterior of the primary body structure 50. Multiple supple elements 54 are provided. The supple elements 54 can be solid gel or packaged liquids. The supple elements 54 are adhered into the deep depressions 52, thereby completing the assembly. The embodiment of FIG. 5 will have an outward appearance nearly identical to that of the previous embodiments. However, although it will appear as through a supple core is disposed within the football, it is not. The supple elements 54 are merely adhered to the depressions 52 on the exterior of the football 51.

[0030] The supple elements 54 can be made from a material that is more dense than the material of the primary body structure 50. Since the supple elements 54 are a distance from the center of the ball, the supple elements 54 produce a gyroscopic effect when the football 51 is thrown in a spiral. The football 51 is therefore easier to throw in a straight spiral.

[0031] It will be understood that the embodiments of the present invention that are illustrated and described are merely exemplary and that a person skilled in the art can make many variations to those embodiments by mixing features of the embodiments and using functionally equivalent components. For instance, the number, shape and location of the open spaces in the shell structure of the ball is a matter of design choice. The shown football can be changed to a baseball, soccer ball, basketball or the like. Furthermore, many materials can be used in the production of the shell structure and the supple core structure. What is of impor-
tance is that the material of the supple core deforms more readily from compression forces than does the shell structure. All such variations, modifications and alternate embodiments are intended to be included within the scope of the present invention as described and claimed.

What is claimed is:

1. A toy ball assembly, comprising:
   an outer shell structure of a first material, wherein said outer shell structure defines open areas; and
   a supple core disposed within said outer shell structure, wherein said supple core can be felt through said open areas of said outer shell structure when said toy ball is held.

2. The assembly according to claim 1, wherein said supple core consists of a liquid fill material encased in a transparent package.

3. The assembly according to claim 2, further including secondary solid objects mixed with said liquid fill material.

4. The assembly according to claim 1, wherein said supple core consists of loose elastomeric objects and lubricant encased in a transparent package.

5. The assembly according to claim 1, wherein said supple core consists of an elastomeric gel.

6. The assembly according to claim 1, wherein said supple core deforms into said open areas from within said outer shell structure and at least partially fills said open areas.

7. The assembly according to claim 1, further including an inner core, wherein said supple core is disposed around said inner core within said outer shell structure.

8. The assembly according to claim 7, wherein said supple core has a density greater than that of said inner core.

9. The assembly according to claim 1, wherein said open areas are symmetrically disposed around said outer shell structure.

10. The assembly according to claim 1, wherein said supple core is softer than said first material of said outer shell structure.

11. A toy ball assembly, comprising:
   a shell structure of a first material, said shell structure having exterior surfaces, wherein a plurality of depressions are disposed on said exterior surfaces; and
   a plurality of supple elements, wherein at least one of said supple elements is disposed in at least some of said plurality of depressions.

12. The assembly according to claim 11, wherein at least one of said supple elements consists of a liquid fill material encased in a transparent package.

13. The assembly according to claim 12, further including secondary solid objects mixed with said liquid fill material.

14. The assembly according to claim 11, wherein at least one of said supple elements consists of loose elastomeric objects and lubricant encased in a transparent package.

15. The assembly according to claim 11, wherein at least one of said supple elements consists of an elastomeric gel.

16. The assembly according to claim 11, wherein each of said supple elements has a density greater than that of said first material of said shell structure.

17. The assembly according to claim 11, wherein said depressions are symmetrically disposed around said shell structure.

18. A method of manufacturing a toy ball, comprising the steps of:
   providing a ball structure having exterior surfaces;
   positioning supple material at predetermined positions along said exterior surfaces of said ball structure so that said supple material is exposed at said predetermined positions, wherein said supple material is softer than said ball structure.

19. The method according to claim 18, wherein said step of positioning supple material at predetermined positions along said exterior surfaces includes providing a core of supple material and placing said supple core within said ball structure, wherein said supple core is exposed through openings in said ball structure.

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