CLAIMS

1. A toothbrush attachment comprising a toothbrush module including:

a sensor unit including an acceleration sensor that detects acceleration concerning a toothbrush; and

a wireless transmission unit that transmits a radio signal indicating the acceleration detected by the sensor unit;

a housing unit that houses the sensor unit and the wireless transmission unit; and

a coupling mechanism that removably attaches the housing unit to the toothbrush;

wherein

the toothbrush includes a substantially rod-like handle and a head, the head being disposed at a first end of the handle and implanted with bristle tufts; and

the coupling mechanism couples a second end of the handle to the housing unit;

and wherein

an instruction reception unit that receives a pressing force as a start instruction for starting an operation of the toothbrush module is disposed on an outer wall surface of the housing unit; and

the coupling mechanism elastically holds the toothbrush with the second end of the handle facing the instruction reception unit.

2. The toothbrush attachment of claim 1, wherein

the coupling mechanism is constituted by an elastomer; and

the elastomer constitutes

a recess that receives the housing unit therein, and

a holding unit that is capable of receiving the second end of the handle and elastically holds the received handle with an elastic force of the elastomer.

3. The toothbrush attachment of claim 2, wherein

the housing unit has a substantially flat bottom surface, an upper surface opposite to the bottom surface, and a side surface connecting the bottom surface and the upper surface to each other;

the recess is formed to receive the housing unit so that the housing unit covers the upper surface and the side surface and is held with the elastic force of the elastomer;

the instruction reception unit is disposed on the upper surface; and

the holding unit holds the handle at the upper surface of the housing unit received by the recess so that an axial direction of the handle is substantially perpendicular to the bottom surface.

4. The toothbrush attachment of claim 2 or claim 3, wherein

the holding unit has an insertion hole whose depth direction extends along an axial direction of the handle so that the insertion hole receives the second end of the handle; and

the insertion hole has a bottom having a bottom part covering the insertion hole.

5. A brushing assistance system comprising:

the toothbrush attachment of any one of claims 1 to 4; and

a wireless terminal device that receives the radio signal;

wherein the wireless terminal device includes

a wireless receiver that receives the radio signal and obtains the acceleration, and an output unit that outputs an image or sound so as to support brushing by a user with the toothbrush based on the acceleration,

wherein

the wireless terminal device further includes

a cleaning effect evaluation unit that cumulatively evaluates a cleaning effect by brushing by the user based on the acceleration , a display unit that displays an image on a predetermined display screen; and

the output section includes a figure display control unit that displays a predetermined figure on the display screen if a cleaning evaluation result obtained by the cleaning effect evaluation unit is less than a predetermined reference cleaning level, and that erases the figure if the cleaning evaluation result exceeds the reference cleaning level.

6. The brushing assistance system of claim 5, wherein the output unit includes a sound output unit that outputs sound based on the acceleration.

7. The brushing assistance system of claim 6, wherein

the wireless terminal device further includes a brushing manner evaluation unit that evaluates the brushing based on the acceleration; and

the sound output unit includes

a music information storage unit that stores music information representing music, and

a music output unit that outputs music based on the music information stored in the music information storage unit; and

the music output unit changes an output mode of the music based on an evaluation result obtained by the brushing manner evaluation unit.

8. The brushing assistance system of claim 5, wherein

the wireless terminal device further includes a brushing position determination unit that determines one or more brushing positions on one or more teeth of the user with the toothbrush based on the acceleration ;

the cleaning effect evaluation unit cumulatively evaluates the cleaning effect for each of the brushing positions determined by the brushing position determination unit; and

the figure display control unit divides the display screen into a plurality of areas associated with the brushing positions, displays a predetermined figure in one of the areas corresponding to one of the brushing positions at which the cleaning evaluation result obtained by the cleaning effect evaluation unit is less than the reference cleaning level, and erases the figure displayed on one of the areas corresponding to one of the brushing positions at which the cleaning evaluation result exceeds the reference cleaning level.

9. The brushing assistance system of any one of claims 5 to 8, wherein

the wireless terminal device further includes

a brushing start determination unit that determines whether brushing by a user is started or not based on the acceleration , and

a timer unit that starts counting an elapsed time until a determination time previously set as a preferable brushing time has elapsed, when the brushing start determination unit determines that the brushing is started, and

the output unit includes a notification unit that announces predetermined information from when the brushing start determination unit determines that the brushing is started until when the elapsed time reaches the determination time.

10. A brushing evaluation system comprising:

the toothbrush attachment of any one of claims 1 to 4; and

a wireless terminal device that receives the radio signal;

wherein the wireless terminal device includes

a wireless receiver that receives the radio signal and obtains the acceleration , and

an evaluation unit that evaluates the brushing based on the acceleration .

11. A brushing assistance system comprising:

a toothbrush module including:

a sensor unit including:

an acceleration sensor that detects acceleration concerning a toothbrush; and

a wireless transmission unit that transmits a radio signal indicating the acceleration detected by the sensor unit; and

a wireless terminal device that receives the radio signal;

wherein the wireless terminal device includes

a wireless receiver that receives the radio signal and obtains the acceleration , and

an output unit that outputs an image or sound in a mode of enhancing enjoyment of a user based on the acceleration wherein

the wireless terminal device further includes

a cleaning effect evaluation unit that cumulatively evaluates a cleaning effect by brushing by the user based on the acceleration, and

a display unit that displays an image on a predetermined display screen; and

the output section includes a figure display control unit that displays a predetermined figure on the display screen if a cleaning evaluation result obtained by the cleaning effect evaluation unit is less than a predetermined reference cleaning level, and that erases the figure if the cleaning evaluation result exceeds the reference cleaning level.

12. The brushing assistance system of claim 11, wherein the output unit includes a sound output unit that outputs sound based on the acceleration.

13. The brushing assistance system of claim 12, wherein

the wireless terminal device further includes a brushing manner evaluation unit that evaluates the brushing based on the acceleration;

the sound output unit includes

a music information storage unit that stores music information representing music, and

a music output unit that outputs music based on the music information stored in the music information storage unit, and

the music output unit changes an output mode of the music based on an evaluation result obtained by the brushing manner evaluation unit.

14. The brushing assistance system of any one of claims 11 to 13, wherein

the wireless terminal device further includes a brushing position determination unit that determines one or more brushing positions on one or more teeth of the user with the toothbrush based on the acceleration;

the cleaning effect evaluation unit cumulatively evaluates the cleaning effect for each of the brushing positions determined by the brushing position determination unit; and

the figure display control unit divides the display screen into a plurality of areas associated with the brushing positions, displays a predetermined figure in one of the areas corresponding to one of the brushing positions at which the cleaning evaluation result by the cleaning effect evaluation unit is less than the reference cleaning level, and erases the figure displayed on one of the areas corresponding to one of the brushing positions at which the cleaning evaluation result exceeds the reference cleaning level.

15. The brushing assistance system of any one of claims 11 to 14, wherein

the wireless terminal device further includes

a brushing start determination unit that determines whether brushing by a user is started or not based on the acceleration, a timer unit that starts counting an elapsed time until a determination time previously set as a preferable brushing

time has elapsed, when the brushing start determination unit determines that the brushing is started, and

the output unit includes a notification unit that announces predetermined information from when the brushing start determination unit determines that the brushing is started until when the elapsed time reaches the determination time.

16. The brushing assistance system of claim 11, wherein

the wireless terminal device further includes a brushing manner evaluation unit that evaluates the brushing based on the acceleration;

the acceleration includes an acceleration applied to the toothbrush, and

the brushing manner evaluation unit evaluates the brushing based on a travel distance in one way of back-and-forth movement of the toothbrush.

17. The brushing assistance system of claim 11, wherein

the wireless terminal device further includes a brushing manner evaluation unit that evaluates the brushing based on the acceleration; and

the brushing manner evaluation unit evaluates the brushing based on a cycle of back-and-forth movement of the toothbrush and a travel speed in back-and-forth movement of the toothbrush.

18. A brushing assistance device comprising:

a wireless receiver that receives a radio signal indicating a predetermined acceleration concerning a toothbrush and obtains the acceleration;

a cleaning effect evaluation unit that cumulatively evaluates a cleaning effect by brushing by a user based on the acceleration;

a display unit that displays an image on a predetermined display screen; and

a figure display control unit that displays a predetermined figure on the display screen if a cleaning evaluation result obtained by the cleaning effect evaluation unit is less than a predetermined reference cleaning level, and that erases the figure if the cleaning evaluation result exceeds the reference cleaning level.

19. A brushing assistance device comprising:

a wireless receiver that receives a radio signal indicating a predetermined acceleration concerning a toothbrush and obtains the acceleration;

a brushing start determination unit that determines whether brushing by a user is started or not based on the acceleration;

a timer unit that starts counting an elapsed time until a determination time previously set as a preferable brushing time has elapsed, when the brushing start determination unit determines that the brushing is started; and

a notification unit that announces predetermined information from when the brushing start determination unit determines that the brushing is started until when the elapsed time reaches the determination time.

20. A brushing assistance program that causes a computer to function as:

a wireless receiving means that receives a radio signal indicating a predetermined acceleration concerning a toothbrush and obtains the acceleration; and

a sound output means that outputs sound based on the acceleration;

wherein the program also causes

the computer to function as:

a brushing manner evaluation means that evaluates the brushing based on the acceleration;

wherein the sound output means includes

a music information storage means that stores music information representing music, and

a music output means that outputs music based on the music information stored in the music information storage means; and

the music output means changes an output mode of the music based on an evaluation result obtained by the brushing manner evaluation means.

21. A brushing assistance program that causes a computer to function as:

a wireless receiving means that receives a radio signal indicating a predetermined acceleration concerning a toothbrush and obtains the acceleration;

a cleaning effect evaluation means that cumulatively evaluates a cleaning effect by brushing by a user based on the acceleration;

a display means that displays an image on a predetermined display screen; and

a figure display control means that displays a predetermined figure on the display screen if a cleaning evaluation result obtained by the cleaning effect evaluation means is less than a predetermined reference cleaning level, and that erases the figure if the cleaning evaluation result exceeds the reference cleaning level.

22. A brushing assistance program that causes a computer to function as:

a wireless receiving means that receives a radio signal indicating a predetermined acceleration concerning a toothbrush and obtains the acceleration;

a brushing start determination means that determines whether brushing by a user is started or not based on the acceleration;

a timer means that starts counting an elapsed time until a determination time previously set as a preferable brushing time has elapsed when the brushing start determination means determines that the brushing is started; and

a notification means that announces predetermined information from when the brushing start determination means determines that the brushing is started until when the elapsed time reaches the determination time.