

A Psychological Mechanism Analysis of Exercise Anxiety Triggered by Fitness Tracker Data

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Abstract: Fitness trackers are widely used to record steps, heart rate, calories, exercise time, sleep, and recovery. These data can support exercise planning, but they can also create pressure when users treat the numbers as fixed standards. This paper examines the psychological mechanisms of exercise anxiety triggered by fitness tracker data. It uses a theoretical approach and does not rely on surveys, experiments, or other empirical methods. The discussion focuses on numerical authority, catastrophic interpretation, all-or-nothing thinking, and the illusion of control. It also explains how fear of losing progress, perfectionism, exercise guilt, external rewards, and social comparison can increase anxiety. Repeated data checking, compensatory exercise, and avoidance of rest may give users short-term relief, but these behaviours can keep the anxiety active. Personal factors such as trait anxiety, health anxiety, body dissatisfaction, and low trust in bodily feelings may make some users more sensitive to tracker feedback. The paper argues that fitness data should be treated as reference information rather than a final judgment of health or self-discipline. Flexible goals, fewer notifications, limited checking, planned rest, and greater attention to bodily feelings can help users maintain a healthier relationship with exercise tracking.

Keywords: fitness trackers; exercise anxiety; health data; perfectionism; social comparison; compulsive exercise; self-monitoring

1. Introduction

Fitness trackers have become common tools in daily exercise (Piwek et al., 2016). Smartwatches, activity bands, mobile applications, and other wearable devices can record steps, heart rate, exercise time, distance, speed, calories, sleep, and recovery status. Many people use these numbers to set goals and check their progress. The data can make exercise

more visible. It can also help users notice changes that are difficult to remember through personal experience alone.

Fitness tracker data are often linked to clear targets. A user may be asked to complete a certain number of steps, burn a set number of calories, exercise for a fixed period, or close an activity ring before the end of the day. Applications may also give scores for sleep, stress, fitness level, training load, and

recovery. These functions make exercise easier to record, but they also change how people understand their bodies. Exercise is no longer judged only through breathing, fatigue, mood, pain, comfort, or enjoyment. It is also judged through numbers shown on a screen.

This change can affect exercise self-evaluation. A person may feel active and comfortable after a walk, but a low calorie estimate can make the activity seem useless. A person may feel tired and need rest, but an unfinished activity ring can create pressure to continue. A short change in heart rate or recovery score may also cause worry (Baron et al., 2017), even when the change is linked to normal sleep, stress, food intake, weather, or measurement error. In these cases, device feedback begins to carry more weight than bodily feelings.

Fitness tracker data are usually presented as clear and objective information. This form of presentation may lead users to believe that every number gives a direct and accurate picture of physical health. Yet wearable devices do not measure all indicators in the same way. Some values are recorded through sensors, while others are estimated through algorithms (Fuller et al., 2020; Shcherbina et al., 2017). Calories, stress scores, sleep stages, fitness age, and recovery levels often depend on calculations based on limited information. The results may be useful, but they are not complete medical judgments. Users who do not understand these limits may treat small changes as serious signs. Exercise anxiety triggered by fitness tracker data refers to worry, tension, guilt, or fear caused by exercise records and health scores (Ryan et al., 2019). The anxiety may appear when a daily target is not completed, when performance data decline, or when a device reports an unusual result. Some users may worry that missing one exercise session will damage their health. Others may believe that a lower score means they are becoming weak, unfit, or undisciplined. Rest may also become difficult because it creates a blank record or breaks a daily streak.

This form of anxiety is different from normal concern about exercise progress. A person may

reasonably review exercise data and change a training plan when needed. Anxiety becomes more serious when data repeatedly control mood, self-evaluation, and behaviour. Users may check their devices many times, exercise despite fatigue, or add extra activity to correct an unfinished goal. They may feel guilty when resting and uneasy when the device is unavailable. The exercise itself may still be healthy in form, but the psychological relationship with exercise becomes rigid.

Tracker-related exercise anxiety is also connected with the need for control. Physical condition does not remain stable every day. Heart rate, speed, strength, sleep, energy, and recovery can change for many ordinary reasons. A tracker turns these changes into visible numbers. For some users, this creates the belief that every change must be explained and corrected. Stable data may bring a brief sense of safety, while unusual data may create a strong need to check again. The device is then used not only to record exercise but also to reduce uncertainty.

Perfectionism can make this process stronger (Stoeber & Otto, 2006). Users with strict standards may expect continuous improvement. They may find it hard to accept slower speed, shorter exercise time, lower calorie use, or a missed target. Exercise records can become proof of discipline and personal value. Good data may produce pride, while poor data may produce shame or self-criticism. The meaning of exercise then moves away from health, pleasure, and physical experience. It becomes a daily test that must be passed.

Social comparison also affects this anxiety. Many fitness platforms allow users to share step counts, running distance, exercise time, and achievement badges. Rankings and online fitness posts may create an image of constant activity and strong self-control. Users often see completed goals but do not see injury, illness, rest, work pressure, or different physical conditions. A person may compare personal data with results produced under very different circumstances. This comparison can make normal exercise seem inadequate.

Gamified design can add more pressure. Streaks, rings, badges, reminders, and rankings are used to keep users active. These features may support regular exercise, but they may also make missed goals feel like losses. A rest day can break a long record. An unfinished ring remains visible. A reminder may appear when the user is tired or busy. The user may exercise to protect the record rather than to meet a real physical need. Digital rewards then replace internal reasons for exercise.

This essay examines the psychological mechanisms behind exercise anxiety triggered by fitness tracker data. It focuses on how numerical authority, catastrophic interpretation, rigid thinking, perfectionism, exercise guilt, social comparison, and repeated checking shape the anxiety experience. It also discusses how checking, compensatory exercise, and avoidance of rest can maintain the problem. The discussion is theoretical and does not use survey, interview, or experimental data. Its aim is to explain why a tool designed to support health may create pressure when users give data too much authority in exercise decisions.

2. Fitness Tracker Data and Exercise Self-Evaluation

Fitness trackers record many parts of daily exercise. The most common data include step count, heart rate, distance, exercise time, speed, calories burned, training load, sleep duration, and recovery scores. Some devices also give stress scores, fitness age, heart-rate zones, and estimates of aerobic capacity. These numbers give users a clear record of what they have done. They also make exercise easier to compare across different days.

Step count is one of the most familiar forms of tracker data. It is simple to understand and easy to connect with a daily target. A person can check the number at any time and know how far they are from the goal. This feature can encourage walking and reduce long periods of sitting. It can also turn normal movement into a task. A user may begin to judge the value of the whole day through a single number. A day with fewer steps may be seen as inactive, even when the person has worked,

travelled, rested after illness, or completed other forms of exercise that the device did not record well. Heart-rate data seem more closely connected with physical health. Many users check resting heart rate, average heart rate, maximum heart rate, and time spent in different heart-rate zones. These readings can help users control exercise intensity. They may also help a person notice when an activity feels unusually difficult. The problem appears when users treat every change as a warning. Heart rate can be affected by sleep, emotion, temperature, caffeine, hydration, illness, and many other conditions. A single high or low reading does not always show a serious problem. A user who does not understand this may become nervous after seeing a number outside the usual range.

Calorie data may become especially important for users who connect exercise with weight and body shape (Plateau et al., 2018; Simpson & Mazzeo, 2017). Many users believe that a workout with a higher calorie count is more useful. A workout with a lower number may feel ineffective, even when it improves strength, balance, flexibility, or mood. The calorie value shown by a tracker is usually an estimate (Fuller et al., 2020; Shcherbina et al., 2017). It depends on personal information, heart-rate data, movement patterns, and the calculation method used by the device. The number may not match the real amount of energy used. Even so, users may treat it as a direct measure of exercise quality.

Training load and recovery scores are more complex. They are designed to help users judge whether they should train harder, maintain the same level, or rest. These scores often combine several types of data, such as recent exercise, heart rate, sleep, and daily activity (Piwek et al., 2016; Fuller et al., 2020). The result is usually shown as a simple number or category. A user may see a message such as “fully recovered,” “low readiness,” or “high training load.” The simple format can make the result easy to follow, but it may hide the limits of the calculation. The score cannot fully know whether the user has muscle pain, emotional stress, work pressure, poor nutrition, or a minor illness.

Fitness tracker data can support exercise planning. A person can use past records to see whether exercise has become more regular. Running pace and distance can show changes in endurance. Heart-rate records can help users compare effort across similar workouts. Sleep and recovery information may remind a person to reduce intensity when tired. These uses are helpful when data are treated as one source of information. The user can combine the numbers with bodily feelings and daily conditions. Problems appear when data become the main standard for judging exercise. The user may stop asking whether the activity felt comfortable, meaningful, or suitable. Attention moves to whether the goal was completed and whether the score was high enough. A walk may feel relaxing, but it may be judged as a failure because the pace was slow. A strength session may feel demanding, but the user may think it was not enough because the calorie count was low. The value of exercise is then reduced to the result shown on the device.

This way of judging exercise can also affect the meaning of health. Health is a broad condition that includes physical function, emotional state, sleep, recovery, and the ability to manage daily life. Tracker data only show selected parts of this condition. A high step count does not always mean that the body is well rested. A low recovery score does not always mean that the user is unhealthy. A normal heart-rate reading does not remove every possible health concern. When users treat limited data as a complete health judgment, they may misunderstand both positive and negative results. Numbers often seem more trustworthy than personal feelings. Bodily feelings are not always clear. A person may be unsure whether tiredness comes from exercise, poor sleep, stress, or low mood. A number appears more certain. It has a fixed form and can be compared with a target. This can lead users to believe that the device knows the body better than they do. They may ignore fatigue because the recovery score is high. They may become worried even when they feel well because the device gives a low score.

This trust in numbers is also linked to the way tracker data are presented. Charts, scores, colours, rings, and warning messages give the data a formal appearance. A green score may suggest safety, while a red score may suggest danger. Users may react to these signs before thinking about the context. The design makes complex physical conditions look simple. It can create the impression that the body can be clearly understood through a small group of indicators.

Personal feelings can also be inaccurate, but replacing them with device data does not solve the problem. A more reasonable approach is to use both sources. A person can check heart rate while also noticing breathing and discomfort. A recovery score can be considered together with sleep quality, muscle pain, mood, and energy. Exercise plans can be adjusted through a mix of records and bodily experience. When users give all authority to the device, they may lose confidence in their own ability to understand physical signals.

Daily targets strengthen this dependence. Many trackers give users a fixed number of steps, minutes, calories, or active hours to complete. The target is shown throughout the day. Notifications remind the user when progress is slow. Activity rings remain open until the required amount is reached. These features keep exercise visible and can support regular habits. They can also make unfinished goals difficult to ignore.

A target can slowly change from a guide into a rule. Users may feel that they must reach it every day, even when their physical condition or schedule changes. A busy workday, poor sleep, travel, illness, or muscle pain may make the usual target unsuitable. The device may still display the same goal. The user may then view adjustment as failure rather than a normal response to real conditions.

Daily feedback can also shape mood. A completed goal may bring satisfaction and relief. An unfinished goal may create guilt or irritation. When this pattern repeats, the user may begin to depend on positive feedback from the device. Exercise is no longer completed only for health or enjoyment. It is completed to receive a score, badge, message, or

visual sign of success. Without this feedback, the activity may feel less valuable.

Streak records make the effect stronger. A user may exercise for many days in a row and become attached to the unbroken record. Rest then carries a clear digital cost. Missing one day means losing the streak and beginning again. The user may continue exercising when tired, ill, or injured because protecting the record feels important. The device does not force the person to exercise, but its design gives the record emotional value.

Dependence can also appear when data are unavailable. A user may forget to wear the tracker and feel that the exercise does not count (Ryan et al., 2019). The person may repeat part of the activity to create a complete record. A device error or empty battery may cause frustration because the user cannot confirm the result. This reaction shows that the record has become part of the exercise experience. The body completed the activity, but the user may not accept it without numerical proof.

Exercise self-evaluation becomes narrow when it depends too much on daily data. Progress in physical activity is rarely stable. Performance can rise and fall across days. A slower run or shorter session may reflect normal fatigue. Rest can protect long-term health and reduce injury risk. Tracker systems often focus on visible completion and continuous records. Users who follow these signals too closely may find it hard to accept variation, rest, or temporary decline.

The same data may produce different reactions in different users. Some people can view the numbers with distance and adjust their goals when needed. Others may be more sensitive to low scores, missed targets, or unusual readings. People with strong perfectionist standards may treat each number as a test of discipline. People with health anxiety may focus on small changes in heart rate or sleep. People who feel dissatisfied with their bodies may place great weight on calorie data and daily activity.

Fitness trackers do not create exercise anxiety in every user. The risk depends on how the data are understood and how much control they have over self-evaluation. When numbers remain a practical

reference, they can support exercise. When they become the main proof of health, progress, and self-discipline, small changes can carry too much meaning. A low score can then affect mood, confidence, and later exercise choices.

3. Main Forms of Fitness Tracker–Related Exercise Anxiety

Exercise anxiety linked to fitness trackers does not appear in only one form. Some users become anxious when they fail to complete a daily goal. Some worry about unusual heart-rate or recovery data. Others fear that slower speed or lower scores show a loss of physical ability. Rest may cause guilt, and comparison may make normal exercise feel inadequate. These reactions often begin with ordinary data, but the user gives the data a stronger meaning than it can support.

3.1 Anxiety About Failing to Reach Daily Goals

Daily goals are a basic part of most fitness trackers. A device may ask the user to complete a fixed number of steps, exercise for a certain number of minutes, burn a set number of calories, or stand up at regular times. The target is usually shown through a progress bar, ring, percentage, or reminder. This makes the goal easy to see throughout the day.

A daily goal can support regular exercise. It gives the user a clear task and makes progress visible. Anxiety may appear when the goal is treated as a strict rule. The user may feel uncomfortable when the activity ring is not closed or when the step count remains below the target. The unfinished number stays visible and may continue to attract attention. This pressure is often stronger near the end of the day. A person may notice at night that several thousand steps are still missing. The person may walk around the home, go outside without a real need, or add an exercise session only to complete the record. The activity may not match the user's physical condition or daily schedule. It is done to remove the discomfort caused by the unfinished target.

Missing a daily goal may also affect self-evaluation. The user may not see it as a small change in routine. It may be viewed as evidence of laziness, weak discipline, or poor self-control. A busy day, bad weather, travel, illness, or lack of sleep may be ignored. The person focuses on the final number rather than the reason for the lower activity level.

The emotional effect becomes stronger when the user has kept a long exercise streak. Each completed day adds value to the record. Missing one goal can break the streak and remove the visible sign of continuous effort. The fear of losing the record may push the user to exercise even when rest is more suitable. The user is no longer only trying to stay active. The user is also trying to avoid the feeling of failure created by the device.

Fixed targets do not always fit daily physical changes. A person may have enough energy on one day and feel tired on another day. Work, sleep, mood, pain, and illness can change the amount of exercise that is suitable. The tracker may still show the same target. When users see the target as a requirement, they may find it difficult to adjust their activity without feeling anxious.

3.2 Worry Caused by Unusual Heart-Rate or Recovery Data

Heart-rate data can create strong worry because users often connect heart rate directly with health. A tracker may show resting heart rate, average heart rate, exercise heart rate, maximum heart rate, and changes across several days. It may also send a warning when the reading is above or below a set level.

An unusual reading can quickly attract attention. A person may see that the resting heart rate is higher than usual and begin to worry about a heart problem. A short rise during exercise may be viewed as a dangerous sign. A lower reading may also cause concern if the user does not know whether it is normal. The number may lead to fear even when the person has no clear physical discomfort.

Many common factors can affect heart rate. Poor sleep, emotional pressure, caffeine, temperature, dehydration, illness, medication, and recent activity

may change the reading. Wrist position and poor contact between the sensor and the skin can also affect the result. Users may not consider these conditions when they see an unusual number. The data are treated as a direct message about the body. Recovery scores can create a similar reaction. These scores often combine sleep, heart rate, activity, and other information. The final result may tell the user that recovery is good, fair, or poor. A low score may make the user feel physically weak before exercise has even begun. The person may start to check the body for signs of tiredness or illness.

A recovery score can also create doubt when it does not match personal feelings. A user may feel energetic but see a low score. The person may then lose confidence and worry that a hidden problem is present. Another user may feel tired but receive a high score. The high score may lead the person to ignore fatigue and continue training.

Repeated checking often follows unusual data. A user may check the heart rate several times within a short period. Each new reading is used to look for safety, but small changes may create more questions. The user may search online, compare readings with general health standards, or ask other people for reassurance. Relief may last only until another unusual number appears.

Fitness tracker readings are not the same as a medical diagnosis. The device records limited signals and uses them to produce simple results. A user who sees every unusual value as evidence of illness may become highly sensitive to normal physical changes. Exercise then becomes a situation in which the person expects danger rather than health or enjoyment.

3.3 Fear of Declining Exercise Performance

Fitness trackers make changes in performance easy to see. Users can compare running speed, distance, heart rate, exercise time, calorie use, and training scores. These records may help a person understand long-term progress. They can also create fear when current results are lower than earlier results.

A slower run may cause worry about losing fitness. A shorter distance may be read as proof that

endurance is falling. A lower calorie count may make the user feel that the workout was not effective. These judgments often ignore daily changes in sleep, weather, route, stress, and physical condition.

Exercise performance does not improve in a straight line. A person may perform well on one day and less well on another day. Short-term decline is common during periods of tiredness, heavy work, poor sleep, or emotional pressure. The body may also need time to recover after intense exercise. Tracker records can make each small decline look more important because the difference is shown in exact numbers.

Some users become highly focused on maintaining their personal best. Past records begin to act as minimum standards. A running speed that once felt like an achievement may later feel unacceptable if it is slightly slower than the best result. This can reduce satisfaction and increase pressure. The person may no longer notice that the activity was still useful.

Fear of decline may also lead to excessive effort. A user may increase speed when the current pace is lower than usual. The person may extend the workout to match an earlier distance or calorie target. Pain and fatigue may be ignored because stopping would leave a weaker record. The device does not require this response, but the visible comparison makes decline harder to accept.

A short drop in performance may also affect identity (Carver & Scheier, 1982). Some users see themselves as active, disciplined, or physically strong. Lower tracker data can threaten this self-image. The person may fear that physical ability is being lost or that earlier effort has been wasted. The emotional reaction then becomes stronger than the actual change in performance.

3.4 Guilt Caused by Rest or Reduced Exercise

Rest is a normal part of exercise. Muscles need time to recover, and the body cannot perform at the same level every day. Fitness trackers often give more attention to completed activity than to rest. Exercise produces steps, calories, rings, badges, and visible

records. Rest may appear as an empty day or a break in progress.

This difference can make rest feel unproductive. A user may know that recovery is needed but still feel uneasy when the activity count is low. The person may check the device and see little movement. The empty record can create the feeling that the day has been wasted.

Guilt may be stronger after a planned workout is missed. The user may believe that the decision shows poor discipline. Rest caused by pain, illness, work, family duties, or lack of sleep may still be treated as a personal failure. The user judges the choice through the missing exercise data rather than through the real reason for resting.

Some users try to correct the missed activity later. They may add extra exercise the next day, reduce rest time, or train at a higher intensity. This compensatory behaviour is used to remove guilt and return the weekly numbers to the expected level. The body's need for recovery receives less attention.

Reduced exercise can create similar pressure. A shorter session may be suitable when the user is tired, but the lower data may cause dissatisfaction. The person may feel that the exercise does not count because it did not reach the usual distance, time, or calorie level. A useful adjustment is then seen as a weak result.

Guilt may also affect rest during illness or injury. A person may continue light or moderate exercise to avoid losing a streak. Pain may be hidden from others or ignored. The user may fear weight gain, loss of fitness, or a drop in future performance. Exercise becomes a way to control guilt rather than a choice based on health (Lichtenstein et al., 2017; Plateau et al., 2018).

3.5 Pressure Created by Comparison with Past Records or Other Users

Fitness tracker data invite comparison. A user can compare today's results with yesterday's results, this week with last week, or the current month with an earlier month. Many platforms also allow users

to compare steps, distance, exercise time, and rankings with friends or online groups.

Comparison with past records can be useful when the user looks at long-term patterns. Pressure appears when every new workout must match or exceed an earlier result. The best record becomes the expected level. Normal variation begins to look like decline. A person may finish a reasonable workout and still feel disappointed because the number is lower than before.

Past records do not show the full situation in which the exercise took place. A faster run may have happened during better weather, after more sleep, or on an easier route. A lower heart rate may reflect a different type of exercise. When users compare only the final numbers, these differences disappear. Comparison with other people can create stronger pressure. Fitness applications often show leaderboards, shared records, badges, and group challenges. A user may see that friends have completed more steps or burned more calories. The person may then feel inactive even when personal exercise needs have already been met.

Online fitness content can raise the standard further. Users often share successful workouts, long distances, high step counts, and visible body changes. Rest days, failed plans, pain, and tiredness appear less often. The user sees selected results and may believe that constant high performance is normal.

People differ in age, health, exercise experience, work schedule, body condition, and available time. Their tracker data cannot be judged by the same standard. Social comparison often removes these differences. A beginner may compare personal performance with an experienced runner. A person recovering from illness may compare step counts with a healthy friend. The result is pressure based on numbers that do not represent equal conditions. Public sharing can also change the reason for exercise. The user may begin to think about how the record will look to others. A lower result may cause embarrassment. Missing a challenge may feel like letting down the group. Exercise becomes connected with social approval, and the user may continue

even when the body needs rest (Festinger, 1954; Arigo et al., 2020).

4. Cognitive Mechanisms of Exercise Anxiety

Fitness tracker data do not create anxiety only because the numbers are high, low, or unusual. The user's interpretation of the data also matters. The same result may be seen as useful information by one person and as a serious warning by another. Anxiety often appears when users give numbers too much authority, expect the worst result, use rigid standards, or try to control every physical change.

4.1 Numerical Authority

Numbers often give people a sense of certainty. A personal feeling may be unclear, but a number appears exact. A user may not know whether a workout was effective, yet the tracker gives a distance, calorie count, heart-rate record, and training score. These results make the exercise look measurable. The user may then believe that the numbers show the true condition of the body.

This belief can give fitness trackers a form of numerical authority. The device is not only used to record exercise. It becomes a judge of exercise quality, physical condition, and personal effort. A high score is treated as proof of good performance. A low score is treated as proof that the exercise was poor or that the body is not in a good state.

The formal design of fitness applications can strengthen this belief (Piwek et al., 2016; Fuller et al., 2020). Data are shown through charts, percentages, colours, scores, and warning messages. A number placed in a professional-looking report may seem more reliable than it really is. Users may assume that the device has examined the body in a complete and scientific way. They may not notice that the result comes from limited sensors and a calculation method.

Some tracker data are measured more directly than others. Step count and heart rate are based on signals collected by the device, but the readings can still be affected by movement, skin contact, device position, and the type of activity. Calories burned, stress levels, sleep stages, fitness age, and recovery

scores involve more estimation. The application uses available data to produce a result, but it cannot fully know the user's physical state.

Users may ignore these limits because the final result is presented as a clear number. A recovery score of 42 looks more exact than a general message saying that the user may need more rest. A calorie value of 380 seems to describe the real amount of energy used. The user may not think about the range of possible error behind the number.

Normal physical variation may also be misunderstood. Heart rate, sleep quality, running speed, strength, and energy can change from day to day. These changes do not always show improvement or decline. They may be connected with weather, emotion, food, hydration, sleep, work pressure, or the time of exercise. When numbers are treated as fully accurate, ordinary variation may be seen as a problem that needs attention.

Numerical authority can reduce trust in bodily feelings. A user may feel well after waking but become worried after seeing a low recovery score. The number changes how the person understands the body. Tiredness, pain, comfort, and mood may receive less attention because the device appears more objective.

The opposite situation can also occur. A person may feel exhausted, but the tracker gives a positive readiness score. The user may then continue with a difficult training plan because the device says that the body is ready. Personal experience is treated as unreliable, even though the device cannot measure every part of fatigue.

This pattern can change exercise decisions. Users may choose the length and intensity of exercise mainly through tracker scores. They may continue because the calorie target is incomplete. They may stop because a recovery score is low, even when light activity would feel suitable. The decision is based less on a broad judgment of physical condition and more on a single number.

Numbers can also enter personal self-evaluation. A user may connect high activity data with discipline and low activity data with laziness. Exercise records then seem to show not only what the person has

done but also what kind of person they are. A missed target may be read as weak self-control. A completed target may bring a sense of personal success.

This link makes negative data more emotionally powerful. When a low score is only information, it can be reviewed without strong distress. When the score is used to judge personal worth, it can produce shame, guilt, and anxiety. The user may feel that a poor record exposes a personal weakness.

Numerical authority becomes stronger through repeated use. The user checks the tracker before exercise, during exercise, and after exercise. Each decision receives support from the device. Over time, the person may lose confidence in making choices without digital feedback. Exercise without a tracker can feel uncertain or incomplete.

A user may also believe that unrecorded exercise has little value. If the device is forgotten or the battery runs out, the activity may feel wasted. The body still completes the movement, but the absence of data makes it harder for the user to accept the experience as real progress. The record begins to replace the activity itself.

4.2 Catastrophic Interpretation

Catastrophic interpretation occurs when a user takes a limited negative result and connects it with a much more serious outcome. A small change is not seen as temporary or ordinary. It is treated as a sign that health, fitness, or self-control is being lost (Baron et al., 2017; Salkovskis & Warwick, 1986).

A poor exercise result can start this process. A user may run more slowly than usual and think that physical ability is declining. A lower calorie count may be read as proof that the workout was useless. A shorter exercise session may lead to fear that earlier progress will disappear. The final judgment is much stronger than the information provided by the data.

The user often moves quickly from the present result to a feared future. One missed workout becomes the beginning of an inactive lifestyle. One broken exercise streak becomes proof that the habit will not return. A low weekly step count is linked with

weight gain or poor health. The person does not allow space for recovery, adjustment, or normal change.

Unusual health data can create stronger fear. A higher resting heart rate may be interpreted as evidence of heart disease. A low sleep score may be taken as proof that the body cannot recover. A poor stress score may make the user believe that serious physical damage is already occurring.

The user may not consider simple explanations. Poor sensor contact, recent movement, caffeine, dehydration, lack of sleep, emotional pressure, or a warm environment may affect the result. Catastrophic thinking selects the most threatening explanation and gives it the most attention.

Anxiety can also change the way new information is understood. Once a user fears a health problem, later readings may be viewed through that fear. A normal value may bring only brief relief. A small rise or fall may quickly restart the worry. The user becomes alert to any sign that supports the feared idea.

This pattern may lead to online searching. A person may search for the meaning of a heart-rate change or a low recovery score. Search results often include many possible causes, including serious illness. The user may focus on the most dangerous explanation, even when it is unlikely or does not match the full situation.

Catastrophic interpretation also affects missed goals. A user may believe that failing to reach the daily step target will harm long-term progress. The person may feel a strong need to correct the failure before the day ends. Extra exercise is used to prevent the imagined result.

The feared result may not be physical illness. It may involve body weight, appearance, or personal identity. A missed calorie target may lead to fear of immediate weight gain. A lower training score may create worry that the person is no longer fit. A shorter workout may be taken as a sign of becoming lazy.

These thoughts often use a chain of negative predictions. A low score means that performance is falling. Falling performance means that fitness will

be lost. Losing fitness means that the body will change. The body change may then be linked with embarrassment, rejection, or poor self-worth. The original data may show only one ordinary daily result, but the user gives it a much wider meaning.

Catastrophic thinking makes uncertainty hard to accept. The user wants a clear guarantee that nothing is wrong. Fitness tracker data cannot provide this guarantee. Each reading has limits, and the body changes naturally. The lack of complete certainty may itself become a source of anxiety.

The person may check the data again to reduce fear. A more normal result can bring relief, but the relief often does not last. The user learns that checking is a way to manage worry. The need to check may then return whenever a new doubt appears.

Catastrophic interpretation may also push users toward unsafe exercise choices. A person who fears losing fitness may train harder after one poor result. A user who fears weight gain may add exercise after missing a calorie target. The action is not based on the body's current needs. It is used to prevent an exaggerated future outcome.

4.3 All-or-Nothing Thinking

All-or-nothing thinking divides exercise results into two extreme groups. Exercise is either successful or useless. A goal is either completed or failed (Baron et al., 2017; Stoeber & Otto, 2006). The body is either improving or declining. There is little room for partial progress, flexible adjustment, or mixed results.

Fitness tracker design can make this form of thinking easy. Activity rings are either closed or left open. A daily target is either reached or missed. A streak is either maintained or broken. These clear categories help users understand progress, but they may also hide the value of effort below the target.

A person who walks 8,000 steps toward a goal of 10,000 has still been active. A user who exercises for twenty minutes instead of thirty has still completed useful movement. All-or-nothing thinking removes this value. The missing part receives more attention than the completed part.

This can make reasonable exercise feel like failure. A shorter session may be suitable after poor sleep, but the user may view it as a weak effort. A slower run may protect the body during hot weather, yet the person may judge it as poor performance. The adjustment is healthy, but the data do not match the fixed standard.

Rigid categories can also affect rest. A day with no formal exercise may be labelled as inactive or undisciplined. The user may not recognise recovery as part of training. Rest does not produce the same visible signs of achievement, so it may appear to have no value.

Exercise goals can become minimum demands rather than general guides. Completing the goal is treated as normal and brings only brief satisfaction. Missing the goal creates strong disappointment. This pattern raises the standard of success while making failure easy to experience.

All-or-nothing thinking also appears in judgments about progress. Users may expect each week to be better than the last. A decline in one measure is treated as a loss of all progress. The person may ignore improvements in other areas. A slower pace may occur with a lower heart rate, but only the pace is noticed. A lower calorie count may occur during a useful strength session, but the number is viewed as the main result.

Different forms of exercise may also be ranked too simply. High-intensity activity is seen as useful, while light activity is seen as weak. Long exercise is valued, while short exercise is dismissed. Activities that improve mobility, balance, or relaxation may receive less respect because they do not produce large numbers.

This pattern can reduce flexibility. A user may continue a planned workout even when the body needs a change. Cutting the session short feels like failure. Lowering intensity feels like giving up. The person may find it hard to choose a middle option because only full completion seems acceptable.

All-or-nothing thinking can also increase self-criticism. A missed target is not described as a single event. It becomes a statement about the person. The user may think, "I have no discipline," rather than

"I did less exercise today." A temporary result is turned into a fixed personal judgment.

This form of thinking can make exercise habits less stable. A user who cannot complete the full target may decide that there is no reason to exercise at all. A person may avoid a short walk because it will not close the activity ring. The strict standard reduces the value of smaller actions that could support a regular routine.

The user may also respond to failure with excessive correction. After missing one goal, the person may set a much harder target for the next day. Extra exercise is used to restore the feeling of success. This response may create fatigue, making later goals harder to complete.

4.4 The Illusion of Control

Fitness trackers can create the impression that the body can be fully managed through data. Daily steps, heart rate, calories, sleep, stress, and recovery are placed into clear charts. The user may begin to believe that enough monitoring will make physical condition stable and predictable. (Carver & Scheier, 1982)

The body does not work in a fully predictable way. Energy, strength, heart rate, mood, and sleep change across days. Some causes are clear, while others are difficult to identify. A person can follow the same routine and still receive different results. This uncertainty can be uncomfortable for users who have a strong need for control.

The illusion of control appears when the user believes that every change can be prevented through careful tracking. A low sleep score means that the bedtime routine must be corrected. A higher heart rate means that food, exercise, or rest must be adjusted. A lower performance score means that the training plan has failed.

Monitoring gives the user a feeling of action. When an unusual value appears, the person can check more data, compare past records, change the target, or add exercise. These actions may create brief relief because the user feels less passive. The real cause of the change may still be unclear.

The need for control can make stable data feel necessary. A user may expect heart rate, running speed, calorie use, and recovery scores to remain within a familiar range. A small difference can then feel like a loss of control. The person may believe that something must be corrected at once.

Physical improvement is also expected to follow a planned line. The user sets a goal, follows the plan, and expects the data to rise in a steady way. When performance falls, the person may feel that effort is no longer producing the expected result. This creates doubt about the body and the training plan. The illusion of control can make rest difficult. Rest does not produce immediate proof of progress. The user cannot always see recovery taking place. Exercise produces clear data and gives the person something to manage. Rest requires trust in a process that is less visible.

Some users try to control anxiety by increasing the amount of information they collect. They may wear the device all day and night, check several health indicators, and compare data across applications. More data seem to offer more certainty. In practice, more readings also create more chances to find unusual results.

A small difference between devices or applications can cause further doubt. One device may report a different calorie count or sleep score from another. The user may not know which result to trust. The attempt to gain control through more measurement creates a new source of uncertainty.

The user may also become highly sensitive to planned targets. Exercise is arranged around fixed numbers. The person decides in advance how many steps, minutes, or calories must be completed. When work, weather, fatigue, or pain affects the plan, the change may feel unacceptable.

A flexible response would allow the target to change with the situation. The illusion of control makes this adjustment feel risky. The user may think that lowering the target will weaken discipline or cause future decline. The original plan is protected even when it no longer fits the body.

Control may also extend to body shape and weight. A person may believe that exact calorie records and

exercise targets can prevent any unwanted physical change. Normal changes in weight or appearance then cause strong worry. The user may respond by increasing exercise or reducing rest.

Repeated checking supports the feeling that the body must always be watched. The user may become uncomfortable when the device is removed. Without current data, the person cannot confirm that everything is under control. Exercise without tracking may feel unsafe, unproductive, or incomplete.

The body may then be treated like a system that should produce stable results when the correct rules are followed. This view leaves little space for illness, tiredness, emotion, age, stress, or ordinary variation. When the body does not follow the plan, the user may blame personal failure or fear that something is wrong.

5. Emotional and Motivational Mechanisms

Fitness tracker data can affect more than the way users think about exercise. The numbers also shape fear, guilt, satisfaction, and motivation. A completed target may bring relief. A lower score may cause worry or disappointment. These feelings can change why a person exercises and how the person responds to rest, fatigue, or temporary decline.

When exercise is mainly guided by health needs and personal interest, users can usually adjust their plans according to physical condition. Data-related anxiety makes this adjustment harder. The user may exercise to avoid fear, protect a record, or remove guilt. The behaviour may look disciplined, but the main force behind it is emotional pressure.

5.1 Fear of Losing Progress

Many users begin tracking exercise because they want to improve fitness, control weight, or build a regular habit. The device records this effort and turns it into visible progress. Step totals, running distance, exercise time, calorie use, and weekly trends show what the user has completed. These records can give the user a sense that improvement is real and can be protected.

Fear appears when the user starts to believe that progress is easy to lose. A lower score or missed workout may be seen as the start of decline. The person may worry that fitness will fall, weight will increase, or the exercise habit will disappear. One unusual day is given the meaning of a long-term change.

Fitness gains do not disappear after one rest day or one short workout. Yet tracker records are organised by day and week. A missed target creates an immediate gap in the record. This gap is easy to see, while recovery and long-term adaptation are less visible. The user may then give more attention to what was not completed than to the progress already made.

Fear of reduced fitness often appears after a decline in performance data. A user may run more slowly, complete fewer steps, or receive a lower training score. The change may come from poor sleep, stress, weather, muscle fatigue, or a different exercise route. The person may still view the result as proof that physical ability is falling.

This fear can lead the user to test the body again. The person may repeat the same activity, extend the next workout, or increase intensity to check whether earlier performance can still be reached. Exercise is then used to confirm that fitness has not been lost. A good result may bring relief, but the relief depends on continued proof from the device.

Weight-related fear can make calorie and activity data more powerful. Some users believe that missing a calorie target will quickly cause weight gain. A lower daily step count may create the feeling that too little energy has been used. The person may add exercise in the evening or reduce rest the next day.

Body weight is affected by many factors and does not change in a simple way after one day of lower activity. Tracker data can still make the risk feel immediate. The unfinished calorie target stays on the screen and gives the user a clear number to correct. The person may feel unable to relax until the gap has been removed.

Temporary decline can be difficult to accept because it conflicts with the idea of steady improvement.

Users often expect exercise records to show a clear upward line. They may believe that regular effort should lead to faster speed, longer distance, lower heart rate, or higher scores. A period of stable or lower performance may then feel like wasted effort. Physical progress is not always steady. Training can produce tiredness before improvement appears. Sleep, work pressure, illness, age, nutrition, and emotional state can also affect performance. The body may need periods of lighter activity. A user who fears decline may treat these changes as signs that the plan is failing.

Rest creates a special form of fear because it produces little active data. A workout gives the user steps, exercise minutes, heart-rate records, and calorie estimates. Rest does not offer the same visible proof. The user may know that recovery matters but still feel that nothing useful is happening.

A planned rest day may be viewed as a threat to earlier progress. The person may worry that muscles will weaken or endurance will drop. A user who has built a long streak may also fear that one rest day will damage the exercise habit. The record becomes proof that the person is still active and committed.

This fear can make users ignore signs of overtraining. Muscle pain, tiredness, poor sleep, low mood, and reduced performance may show that more recovery is needed. The user may continue because stopping feels more dangerous than continuing. The feared loss of progress becomes more important than the current state of the body.

Some users also fear losing the identity linked with exercise. The tracker may show that they are runners, active people, or disciplined users. Weekly summaries and personal records support this identity. A lower result may then feel like more than a change in performance. It may seem to challenge the person's view of themselves.

A user who sees exercise as part of personal identity may feel threatened by illness, injury, or a busy period. Reduced activity creates a distance between the current record and the person they believe they should be. This distance can cause anxiety. The user

may return to exercise too early because the inactive period feels hard to accept.

Fear of losing progress can also narrow attention. The person focuses on steps, calories, speed, and completed sessions. Other signs of progress may receive less attention. Better mood, improved sleep, less pain, stronger balance, or greater enjoyment may not appear clearly in the tracker. The user may believe that progress has stopped when only one measure has changed.

5.2 Perfectionism and Self-Criticism

Perfectionism can make tracker data feel like strict standards. A person with perfectionist tendencies may not use the numbers only to understand exercise. The numbers become demands that must be met. The user expects full completion, stable performance, and regular improvement.

Rigid exercise goals are often clear and exact. The user may decide to complete 10,000 steps every day, exercise for a fixed number of minutes, or maintain a certain weekly distance. Clear goals can support a routine, but rigid goals leave little room for daily change.

A goal that is suitable on a normal day may not fit a day with poor sleep, pain, illness, travel, or heavy work. A flexible user may reduce the target. A perfectionist user may feel that any reduction shows weakness. The original number remains the only acceptable result.

Fitness tracker design can support this strict standard. A goal is displayed as complete or incomplete. An activity ring is closed or left open. A streak is protected or broken. These simple categories match perfectionist thinking because they do not show much space between success and failure.

A person may complete most of the target and still focus on the missing part. Walking 9,000 steps may feel disappointing when the goal is 10,000. Exercising for twenty-five minutes may feel useless when the plan requires thirty. The completed effort loses value because it is not perfect.

Perfectionism also creates a demand for constant improvement. A user may expect each run to be

faster, each workout to burn more calories, or each week to contain more activity. Stable performance can feel unsatisfactory. A small decline may cause strong self-criticism.

This demand does not match the way the body performs. Physical ability changes from day to day. Long-term progress often includes periods of stability and decline. A strict need for improvement turns these normal changes into personal failures.

The user may compare current results with a personal best rather than with a reasonable daily standard. The best running time, longest distance, or highest calorie count becomes the new minimum. Earlier success then creates pressure for later workouts.

Personal records are usually reached under favourable conditions. The user may have slept well, followed an easier route, or felt highly motivated. Repeating the same result every time may not be realistic. A perfectionist user may ignore these differences and blame the self when the record is not matched.

Self-criticism often follows a missed target. The person may use harsh labels such as lazy, weak, or undisciplined. These judgments are much wider than the actual event. A missed exercise session becomes proof of a personal defect.

The user may also reject valid reasons for lower activity. Work demands, family duties, illness, pain, or emotional stress may be treated as excuses. The person believes that a disciplined user should complete the target under any condition. This belief makes self-care look like failure.

Perfectionism can reduce satisfaction after successful exercise. Completing a target may not bring lasting pride because the user quickly looks for what could have been better. The pace may have been too slow. The heart rate may have been too high. The calorie number may have been lower than expected. The exercise was completed, but the user still feels that it was not good enough.

This pattern moves attention away from the experience of exercise. The person may not notice enjoyment, energy, relaxation, or a sense of physical

ability. The final score decides whether the session deserves a positive reaction.

Positive data may also raise the next standard. A user who completes 10,000 steps may set a target of 12,000. A longer run may lead to pressure to go even farther. Success does not reduce the demand. It creates a new level that must be maintained.

The result can be a cycle of effort and dissatisfaction. The user works hard to reach the target, feels brief relief, and then sets a higher standard. Exercise becomes more demanding, while satisfaction becomes harder to reach.

Self-criticism may be used as a form of motivation. Some users believe that being strict with themselves is necessary for progress. They fear that self-acceptance will lead to laziness. Missing a goal is followed by blame, and the blame is expected to force better behaviour the next day.

This form of motivation can keep a person active for a period, but it also connects exercise with punishment. The user begins to exercise to avoid self-attack rather than to support health. A workout may bring relief because it stops the criticism for a short time.

Perfectionism can make rest feel unacceptable. The user may believe that a strong and disciplined person should always be able to exercise. Rest is allowed only when the device gives a very low recovery score or when illness is severe. Personal tiredness alone may not seem like a good enough reason.

The person may also set rules about how rest should be used. A rest day may still require a step target, light exercise, or calorie control. Full rest creates too much discomfort because it leaves the day without visible achievement.

5.3 Data-Based External Motivation

Exercise motivation can come from personal interest, physical comfort, health goals, social approval, or digital rewards. Fitness trackers often use scores, rings, badges, rankings, reminders, and streaks to encourage activity. These tools can help users begin and maintain exercise. Problems appear

when the digital reward becomes the main reason for movement.

A user may start exercising to feel healthier or enjoy an activity. After repeated use of the tracker, attention may move toward completing the ring or reaching the daily target. The person continues walking because several hundred steps are missing. The reason for the activity is no longer the walk itself. It is the need to change the display from incomplete to complete.

Closing an activity ring gives a clear sign of success. The colour, movement, sound, or message can produce satisfaction. The reward arrives at once, while many health benefits of exercise take longer to appear. This makes the digital sign emotionally powerful.

The user may begin to arrange exercise around the reward. A workout is selected because it produces more calories or active minutes. An enjoyable activity that the device records poorly may be avoided. The value of the activity depends on how well it contributes to the visible target (Teixeira et al., 2012).

Badges can create a similar effect. A user may receive a badge for completing a weekly challenge, reaching a distance, or maintaining a streak. The badge records achievement and can be shared with other people. It can support effort, but it can also turn exercise into a repeated search for digital proof. Once a badge is earned, a harder one may appear. The user may feel pressure to continue even when the new target does not fit personal needs. The reward system keeps raising the task. The person may follow the device's challenge rather than a balanced exercise plan (Mazeas et al., 2022).

Rankings add social value to the numbers. A user may compare steps or exercise time with friends, family members, or group members. Moving upward in the ranking brings satisfaction. Falling behind may cause embarrassment or anxiety.

The ranking does not fully reflect health or effort. Participants may have different jobs, schedules, ages, and physical conditions. A person who walks all day at work may collect more steps than someone who completes a careful strength session. The

simple ranking still presents the results as a direct comparison.

Praise from other users can also become part of exercise motivation. Shared workout records may receive likes, comments, or supportive messages. This attention can make exercise feel socially valuable. The person may then feel less motivated when a workout is not shared or receives little response.

External rewards are not always harmful. They can help a beginner build a routine and make an abstract goal easier to follow. Dependence becomes a problem when the user cannot value exercise without the reward. The activity may feel pointless when the tracker is not worn or when the data fail to upload.

A person may complete a long walk but feel disappointed because the device did not record it. The body received the activity, but the digital result is missing. The user may repeat some movement to create the expected number. This reaction shows that the record has become more important than the exercise experience.

Interest may also fall when rewards are absent. An activity without a clear score may seem boring. The user may avoid exercise that cannot be measured easily, such as stretching, casual play, slow walking, or certain forms of strength work. Activities are selected according to the quality of data they produce.

Data-based motivation can weaken personal choice. The tracker decides when the user should move, how much activity is enough, and whether the day is successful. Notifications may interrupt rest or work. The user responds because leaving the target incomplete creates discomfort.

The person may also lose contact with internal reasons for exercise. Questions such as "Do I enjoy this activity?" or "Does my body need movement today?" receive less attention. The more urgent question becomes "What does the tracker still require?"

External motivation can make exercise habits less stable when the rewards lose their effect. A badge that once felt exciting may later feel ordinary. The

user may need a harder target or a longer streak to feel the same satisfaction. When the digital reward is no longer attractive, interest in exercise may fall.

This pattern can also create conflict between the device and the body. The tracker may encourage more activity on a day when the person feels tired. The user may follow the target because completing it brings relief and praise. Physical discomfort is treated as less important than the visible reward.

5.4 Exercise Guilt

Exercise guilt refers to the negative feeling that appears when a person believes that they have not exercised enough. Fitness tracker data may make this guilt more visible by showing missed activity through clear numbers (Plateau et al., 2018; Simpson & Mazzeo, 2017). An unfinished goal becomes visible proof of what the user failed to do.

A person may feel guilty after missing a planned workout. The reason may be lack of time, illness, tiredness, work, or family duties. The user may still believe that exercise should have been completed. The missed session is treated as a personal choice rather than a result of real conditions.

The tracker can keep the guilt active. An open ring, low step count, or broken streak remains on the screen. The user may check it several times and think about the missing activity. Without the visible record, the person might accept the change more easily.

Exercise guilt is often linked with moral judgment. Being active is associated with discipline, responsibility, and self-control. Rest or low activity may then be associated with laziness or weakness. The user does not only think, "I exercised less today." The person thinks, "I failed to control myself."

This moral meaning gives exercise data more emotional weight. A high score becomes proof that the user has been good and disciplined. A low score creates shame. The numbers begin to judge character rather than activity.

Some users respond to guilt through compensatory exercise. A missed session is followed by a longer or harder workout. A low step count leads to extra

walking. A calorie target that was not reached creates pressure to exercise more the next day.

Compensatory exercise may look like commitment, but its purpose is often to remove guilt. The user feels that a balance must be restored. Extra activity is used to correct the earlier failure.

This correction may ignore physical needs. A person may still be tired or unwell but feel unable to rest because the previous day's target was missed. The workout is completed under emotional pressure. Pain and fatigue may be treated as costs that must be accepted.

Guilt can also affect eating. A user may believe that food must be earned through exercise. A lower calorie result may create discomfort after eating. The person may add exercise to cancel the perceived effect of the meal.

This relationship turns exercise into a form of repayment. Movement is no longer only connected with health or enjoyment. It is used to correct eating, rest, or inactivity. The user may feel unable to make ordinary choices without checking whether enough activity has been completed.

Rest days can produce guilt even when they are part of a planned routine. The person may know that recovery supports later performance. The low activity record still creates uneasiness. The user may add steps or a light workout so that the day does not look empty.

Exercise guilt may become stronger after social comparison. A user who rests may see that friends have completed workouts or reached high step counts. Personal rest then feels less acceptable. The person may believe that others are more disciplined. Online fitness posts can create the same effect. Images of early workouts, long runs, and daily training may make constant exercise look normal. The user sees the completed activity but not the other person's recovery, pain, free time, or private difficulties.

Guilt can be difficult to reduce because exercise brings quick emotional relief. After completing extra activity, the user may feel calmer and more acceptable. This relief teaches the person that exercise is the correct response to guilt. The same

behaviour is likely to return after the next missed target.

The link between exercise and personal value may then become stronger. The user feels confident on active days and disappointed on inactive days. Self-respect depends on whether the tracker shows enough movement.

This dependence can affect daily decisions. The person may refuse social plans, delay work, or reduce sleep to protect the exercise record. Missing the target feels more emotionally costly than changing other parts of life.

Exercise guilt may also make injury or illness hard to manage. The user may understand that rest is needed but still feel that inactivity is wrong. Returning to exercise becomes a way to recover a positive self-image. The person may begin again before the body is ready because the emotional need is stronger than the physical warning.

6. Behavioural Maintenance of Exercise Anxiety

Exercise anxiety does not remain only at the level of thoughts and feelings. It can lead to repeated actions. Users may check data many times, add exercise after a missed target, or avoid rest even when they feel tired. These actions often reduce anxiety for a short period. The relief makes the user more likely to repeat the same action later.

This pattern helps explain why tracker-related anxiety can continue. The person does not need to feel anxious every time the device is used. A few strong experiences can build a habit. An unusual heart-rate reading may lead to repeated checking. A missed goal may lead to extra walking. A broken streak may make the person more careful about completing later targets. The device slowly becomes part of the user's way of managing worry.

6.1 Repeated Data Checking

Fitness trackers allow users to view exercise and health data at almost any time. Heart rate can be checked during work, rest, and exercise. Step counts, calorie estimates, active minutes, sleep scores, and recovery levels are always available on

the screen. Easy access can support awareness, but it can also encourage repeated checking.

A user may check the step count several times during the day to see whether the daily goal is still possible. During exercise, the person may look at heart rate, pace, distance, and calories every few minutes. After exercise, the same information may be opened again to confirm the final result. Weekly records and past sessions may also be reviewed repeatedly.

Repeated checking often begins with a reasonable purpose. The user wants to know whether the exercise intensity is suitable or whether the planned distance has been reached. The action becomes less useful when it continues without a clear need. The person may already know the general result but still feel a need to look again.

This need is often linked with uncertainty. A user may worry that the heart rate is too high. Checking the device gives an immediate answer. When the reading looks normal, anxiety falls. The person feels safer for a short time.

The short relief gives checking a strong emotional value. The user learns that looking at the number can reduce fear. The next time worry appears, checking becomes the natural response. This can happen even when there is no new physical sign.

The relief does not always last. Heart rate changes from moment to moment. Pace can rise and fall during the same workout. Calorie estimates increase in small steps. A new reading may be slightly different from the earlier one. The user may then wonder which result is correct.

Small changes can create a new need to check. A person who sees a heart rate of 92 may check again and see 97. The difference may be normal, but the user may think that the number is moving in a dangerous direction. Another check is used to find a lower result. Each reading becomes part of the worry.

Repeated monitoring also increases attention to physical sensations. A user who often checks heart rate may begin to notice every change in breathing, heartbeat, warmth, or tiredness. These feelings are

common during exercise, but close attention can make them seem stronger.

The person may touch the chest, check the pulse, or stop exercising to look at the device. A normal rise in heart rate may feel unusual because the user is watching it so closely. The body becomes the object of constant inspection.

Repeated checking can change the meaning of exercise. The user may pay less attention to movement, surroundings, enjoyment, or conversation. Attention remains on the screen. A run becomes a series of judgments about pace, heart rate, and distance.

This can reduce the natural flow of exercise. A person may change speed every time the pace falls. The user may slow down after a small rise in heart rate, then speed up again when the number drops. Exercise decisions are made through short data changes rather than the overall physical experience. Calorie data can create another form of checking. Users who connect exercise with weight control may watch the calorie estimate throughout the session. A low number may lead them to continue longer. The exercise ends only after the expected value appears. The calorie estimate may rise more slowly than the user hoped. The person may become impatient or disappointed. A session that would normally feel complete is extended because the data do not provide a satisfying result.

Sleep and recovery scores may be checked in the morning before the user notices how the body feels. The score becomes the first message about the day. A low result can affect mood and expectations. The user may reopen the application several times to review sleep stages, heart rate, or periods of waking. This search for an explanation may not reduce uncertainty. Different parts of the report may seem to conflict. Sleep time may be long, but the recovery score may be low. Deep sleep may appear short, while the user feels rested. The person may continue checking because the data do not give one clear answer.

Repeated checking can also involve several devices or applications. A user may compare the smartwatch with a phone application, exercise

machine, chest strap, or another tracker. Different results can create doubt. The person may check more sources in an attempt to find the correct number.

Measurement differences are common because devices use different sensors and calculation methods. The user may not understand why the results differ. More information then produces less confidence.

Data history gives users another area to inspect. A person may compare today's heart rate with the same day last week, review changes in resting heart rate, or search for a pattern in sleep scores. Looking at long-term patterns can be useful. Anxiety appears when every small difference is treated as a clue that something is wrong.

The user may spend a long time searching for the reason behind a change. A higher heart rate on one morning may be compared with food, sleep, stress, and earlier exercise. The person may still feel unable to reach a certain answer.

Repeated checking can reduce confidence in personal judgment. The user becomes less willing to decide whether to exercise without looking at the device. Rest, intensity, and duration are chosen through data rather than a mix of data and bodily feelings.

Exercise without the tracker may feel unsafe or incomplete. The person may worry that the heart rate cannot be controlled or that the activity will not count. Forgetting the device can lead to frustration before the exercise even begins.

Some users may stop the activity and return home to get the tracker. Others may complete the exercise but feel that the session has little value because no record exists. This response shows that checking is no longer only a helpful function. It has become part of the user's sense of certainty.

Repeated checking can also affect daily concentration. The user may open the application during work, meals, social contact, or rest. Thoughts about the unfinished goal return throughout the day. The person may find it hard to focus until the activity number reaches the expected level.

6.2 Compensatory Exercise

Compensatory exercise refers to extra activity used to correct a missed target, low score, period of rest, or eating behaviour. The person does not exercise only because movement is wanted or needed. Exercise is used to remove guilt and restore a preferred record.

A common example occurs after a daily step goal is missed. The user may add more walking late in the evening. The person may walk around the home, use stairs repeatedly, or go outside only to raise the number. The activity stops when the target is complete.

This behaviour can appear harmless when it happens occasionally. It becomes more concerning when the user feels unable to leave the target unfinished. The extra movement is driven by discomfort. The person does not feel free to decide whether the goal still fits the day.

Compensation may also occur on the following day. A user who exercised less than planned may increase the next workout. A missed thirty-minute session may lead to an hour of exercise. A low weekly distance may create pressure to complete a long session before the week ends.

The extra exercise is treated as repayment. The user believes that the missing activity created a debt that must be removed. The weekly record needs to return to the planned level, even when the body has not recovered.

Low performance scores can also lead to compensation. A runner may see a slower pace and decide to repeat part of the route. A user may extend a workout because the calorie count is lower than expected. A low training score may lead to higher intensity in the next session.

The person is trying to prove that the poor result was temporary. A better number is expected to repair confidence. When the expected result appears, anxiety may fall. This relief makes the user more likely to use extra exercise after later disappointments.

Compensatory exercise often ignores the reason behind the low result. A slower pace may come from poor sleep, heat, illness, or muscle fatigue. Adding

more exercise can increase the same problem. The user may still see extra effort as the correct answer because stopping feels like accepting decline.

Exercise may also be used to correct eating. A user who believes that too many calories were eaten may add walking, running, or another workout. The tracker provides an estimate of calories burned, which seems to offer a way to balance food intake.

The body does not manage food and exercise through a simple daily calculation. Calorie estimates from trackers also have limits. The visible numbers can still create the impression that food can be cancelled through movement.

This belief may lead users to treat exercise as punishment. An enjoyable meal is followed by a demanding workout. A day with lower activity may lead to eating less or exercising more. The person's choices are guided by the need to correct a number. Compensation can appear after rest as well. A planned rest day may be followed by a harder session because the user feels that no progress was made. The user may try to recover the missed steps, active minutes, or calories within a short time.

This response reduces the value of rest. Recovery is treated as a loss that must be corrected. The next workout may begin before the body is ready for greater effort.

A person who protects an exercise streak may use a small amount of activity to avoid recording a rest day. Even when ill or injured, the user may walk, cycle, or complete a short workout so the record remains active. The activity may be described as light, but its purpose is still to avoid the emotional effect of stopping.

Compensatory exercise can make targets rise over time. A user may complete extra activity after one missed goal and then use the higher result as a new standard. The next normal session may look weak in comparison. More exercise is needed to produce the same sense of success.

The user can become trapped between fatigue and correction. Extra exercise creates tiredness. Tiredness lowers later performance. The lower result causes disappointment and leads to more

compensatory activity. The body receives less time to recover.

This pattern may increase the risk of pain or injury. The person may continue through soreness because the target feels urgent. Warning signs are treated as barriers rather than useful information.

Compensatory exercise can also reduce enjoyment. The activity is connected with a missed target, guilt, or fear. The user may feel forced to complete it. Relief comes only after the required number appears.

The emotional result can be confusing. A person may feel proud of completing extra exercise while also feeling tired and pressured. The visible record supports the idea that the action was successful, even when the process was unhealthy.

6.3 Avoidance of Rest

Rest allows the body to repair tissue, restore energy, and adapt to training. It also helps reduce mental tiredness. Many users understand that recovery is important, but tracker-based goals can make rest difficult to accept.

Activity is clearly recorded. Rest is less visible. A workout produces heart-rate graphs, calories, distance, and exercise time. A rest day may show a low step count and an unfinished ring. The screen gives activity a visible reward, while recovery receives less attention.

This difference can make users feel uneasy during rest. The person may check the tracker and notice that little progress has been made. The low activity record creates pressure even when rest was planned. A user may begin with a full rest day but later add walking or light exercise. The added activity is not always based on physical need. It is used to make the record look less empty.

Some people find it hard to separate light movement from training. A short walk becomes a longer walk because the step count is close to the target. Stretching is followed by another workout because the activity ring remains open. The rest day slowly loses its purpose.

Avoidance of rest is often linked with fear of losing fitness. Users may believe that one or two days

without exercise will reduce strength or endurance. The tracker makes the break visible, which can make the feared loss seem more real.

A long streak can increase this pressure. The user may have completed the daily goal for several weeks or months. Rest then means breaking a record that carries emotional value. The person may continue exercising mainly to protect the streak.

Illness and injury can create a stronger conflict. The body may need rest, but the tracker still displays the usual targets. Notifications may remind the user to stand, walk, or exercise. The person may feel that inactivity is a failure even when it is medically sensible.

Users may ignore pain because stopping would lower the exercise record. Mild pain may be described as something that should be pushed through. Fatigue may be treated as weak motivation. The device's goal appears clear, while bodily signals can seem uncertain.

This behaviour can delay recovery. Continued exercise may keep the painful area under stress. Poor sleep and general tiredness may become worse. The user may still feel unable to reduce activity because lower numbers create anxiety.

Rest can also be avoided through reduced sleep. A person may exercise late at night to complete a target. The user knows that sleep time will be shorter but feels unable to leave the activity ring open. Immediate completion is valued more than recovery the next day.

The next morning may bring a lower sleep or recovery score. This result can create further worry. The person may then exercise more to protect progress or exercise less while repeatedly checking the score. The original attempt to complete one goal creates problems in another area.

Avoidance of rest may affect social and work life. A user may leave an event early to finish a workout. Work may be delayed because the daily target is incomplete. Time with family may be reduced to protect the exercise routine.

The person may describe this behaviour as discipline. A stable routine can be helpful, but discipline does not require ignoring all changes in

health and daily life. A routine becomes rigid when the user cannot adjust it without guilt or fear.

Some users need external permission to rest. They may accept a rest day only when the device reports a very low recovery score. Personal tiredness, pain, or low mood does not feel valid enough. The tracker becomes the authority that decides whether rest is allowed.

This dependence can create another problem when the score suggests exercise despite clear fatigue. The user may follow the device and reject personal experience. Rest is delayed because the number does not confirm the need.

A balanced exercise habit includes both movement and recovery. Tracker-based anxiety can make only movement feel productive. The user learns to value what can be counted and may distrust physical processes that remain invisible.

6.4 The Anxiety-Checking Cycle

The behavioural maintenance of exercise anxiety often follows a repeated cycle. A negative or unusual result creates worry. The user checks the data, adds exercise, or avoids rest. These actions reduce discomfort for a short period. The short relief teaches the person to use the same response when later anxiety appears.

The cycle may begin with a low exercise score. The user sees that the daily target is incomplete and feels tense. The person checks the application several times, calculates how much activity is still needed, and completes extra walking. When the ring closes, relief appears.

The user may believe that the extra exercise solved the problem. The real source of relief was the removal of anxiety. This difference matters because the person learns that an unfinished target should not be tolerated. It must be corrected.

The next low score may create anxiety more quickly. The user already knows what happened before and expects discomfort. Extra activity begins earlier. The target gains more control over daily behaviour.

Heart-rate worry can follow the same pattern. An unusual reading creates fear. The user checks again and sees a more familiar number. Anxiety falls. The

person learns that repeated checking is needed to feel safe.

A later reading may lead to faster and more frequent checking. The user becomes less able to wait and observe the wider situation. Small changes feel urgent because checking has become the main way to manage uncertainty.

The cycle does not require a truly dangerous result. It can begin with normal variation, measurement error, a missed goal, or a lower score. What keeps the cycle active is the meaning given to the result and the relief created by the response.

Repeated action can make the feared situation feel more dangerous. When a person checks heart rate ten times, the behaviour sends an internal message that the number must be important. When a user exercises late at night to complete a target, the action suggests that leaving the goal unfinished would have been unacceptable.

The behaviour then supports the anxious belief. The user may think, "I had to check because the reading could have been dangerous," or "I had to exercise because missing the target would damage my progress." The fact that nothing bad happened is credited to the checking or exercise.

This makes it difficult for the user to learn that the anxiety might have fallen without action. The person does not experience leaving the number unchecked or allowing the goal to remain incomplete. The feared outcome is never tested in a calm way.

New data also create fresh uncertainty. After extra exercise, the user may check whether enough calories were burned. A higher heart rate may then cause concern. A workout used to reduce one form of anxiety creates another set of numbers to examine.

A low sleep score after late exercise may create worry about recovery. The user may check heart rate, stress, and readiness the next morning. The amount of data grows, and each result offers another possible problem.

The cycle can spread from one indicator to several indicators. A user may begin by checking steps and later monitor calories, heart rate, sleep, stress, and

recovery. More areas of daily life come under numerical control.

Mood can also become tied to the cycle. Good data bring relief, confidence, and calm. Poor data bring tension and self-criticism. The user's emotional state changes according to the screen.

This dependence makes ordinary variation harder to accept. A lower result is not only information. It removes the sense of safety that a good number provides. The user feels a strong need to restore the preferred state.

The cycle may become stronger during periods of stress. When work, study, relationships, or health already create uncertainty, tracker data offer a clear area to control. The person may focus more closely on exercise goals because they seem manageable.

Completing targets can create a short sense of order. Yet the body cannot produce the same results every day. A later change restarts the anxiety. The user then increases checking or exercise in an attempt to regain control.

The cycle can continue even when the person understands that the behaviour is excessive. The user may know that checking too often increases worry or that extra exercise is not needed. The immediate discomfort still makes the action hard to resist.

The person may promise to check only once, then reopen the application after a few minutes. A planned rest day may turn into exercise after repeated thoughts about the low activity count. Knowledge alone does not remove the pattern because the behaviour has become linked with relief.

Breaking this link requires the user to experience uncertainty without immediately correcting it. The person needs to learn that an unfinished goal can remain unfinished, that a single unusual reading can be observed without repeated checking, and that anxiety can fall even when no extra exercise is completed.

7. Social and Individual Factors

Fitness tracker data do not work in isolation. Users often see their records inside social platforms, group

rankings, fitness communities, and online content. These settings give exercise data a social meaning. A step count is no longer only a personal record. It may also become a sign of discipline, health, body control, or social status.

Tracker design also affects how users respond to data. Daily streaks, activity rings, badges, reminders, and rankings are designed to keep users active. These features may help people build exercise habits. They can also make unfinished targets feel urgent and make rest feel like a loss.

The same tracker does not create the same reaction in every person. Some users can accept a low score and adjust their exercise plan. Others may feel strong worry after a small change. Trait anxiety, health anxiety, perfectionism, body dissatisfaction, and low trust in bodily signals can make users more sensitive to tracker feedback.

7.1 Social Comparison

Social comparison is common in exercise. People often judge their own ability by looking at what others can do (Festinger, 1954). Fitness trackers make this comparison easier because exercise is shown through simple numbers. Steps, distance, speed, calories, active minutes, and workout frequency can all be placed next to another person's results.

A user may compare daily steps with friends, family members, or coworkers. If another person reaches 15,000 steps while the user reaches 8,000, the lower number may create disappointment. The user may feel inactive even when 8,000 steps are suitable for the day. Personal needs receive less attention because the other person's number becomes the main standard.

This comparison often ignores differences in daily life. One person may have a job that requires walking. Another person may sit for long periods at work. A student may have more time for exercise during one week, while an office worker may face long working hours. Step totals reflect these conditions, but rankings usually show only the final number.

Age, health, exercise experience, body condition, and access to exercise spaces also affect performance. A new runner cannot be judged by the same standard as an experienced runner. A person recovering from illness may need less exercise than a healthy user. A simple ranking removes these differences and makes the results look directly comparable.

Calorie data can create similar pressure. A user may see that someone else burned more calories during a workout. The person may believe that the other exercise session was more useful. This judgment may be inaccurate because calorie estimates depend on body size, heart rate, movement type, exercise duration, and the device's calculation method.

A lower calorie number does not always mean lower effort. Strength training may produce a smaller calorie estimate than running, but it can still improve strength and physical function. A shorter workout may be more suitable for a user with limited time or lower fitness. Social comparison reduces these details to one visible result.

Exercise time is also easy to compare. Online posts often show long runs, long cycling sessions, or daily gym visits. A user who exercises for a shorter period may feel that personal effort is not enough. The person may extend a session only to reach a number that seems more acceptable.

Longer exercise is not always better. Training quality, physical condition, recovery, and personal goals also matter. A one-hour workout may be unsuitable for a tired beginner. A twenty-minute session may be a reasonable choice. When users compare only duration, they may ignore whether the exercise fits their own needs.

Rankings make comparison more direct. Many applications place users in step challenges, weekly competitions, or group leaderboards. The current position is shown clearly. Moving upward may bring satisfaction, while falling behind may create pressure.

A ranking changes exercise from a personal health activity into a competition. The user may begin to exercise not because the body needs movement but because another person has moved ahead. Extra

steps are used to protect a position or avoid finishing near the bottom.

Group challenges can support social contact and shared motivation. The problem appears when users feel that they cannot reduce activity without disappointing others. A person may continue exercising while tired because the group depends on each member's score. Personal limits become harder to express.

Shared records also create pressure. Users can post running routes, workout summaries, activity rings, badges, and personal records. Other people may respond with likes, comments, or praise. Positive attention can make the exercise record feel socially valuable.

The user may then become more concerned with how the record appears. A normal workout may not seem worth sharing. A short session or slow pace may create embarrassment. The person may increase distance or intensity to produce a result that looks more impressive.

Public records often show achievement without context. A shared running result does not show poor sleep, pain, work pressure, or the amount of rest that followed. Viewers see the successful number but not the conditions behind it. This makes high performance look easier and more common than it is.

Online fitness content can create unrealistic standards. Social media often gives more attention to dramatic body changes, long exercise streaks, early morning workouts, high step counts, and strict routines. Ordinary activity receives less attention because it is less likely to attract interest.

Users may repeatedly see people who exercise every day and present strong self-control. These posts can create the belief that a healthy or disciplined person should always be active. Rest, lower motivation, and irregular routines may then appear abnormal.

The content is often selected before it is shared. People are more likely to post a successful workout than a missed session. They may show a personal best but not the slower sessions that came before it. They may share a completed activity ring but not the days when the goal remained unfinished.

This selective presentation affects comparison. A user compares a full personal experience with another person's best moments. Personal tiredness, doubt, and missed goals are compared with polished records. The comparison is unequal from the beginning.

Body-related fitness content can make the pressure stronger. Users may see exercise linked with thinness, muscle definition, or a particular body shape. Tracker data then become tools for measuring whether the body is moving toward the expected image.

A low calorie count may create fear that body change will stop. A rest day may feel dangerous because it does not support the expected appearance. The user may exercise to reduce anxiety about the body rather than to improve health or comfort.

Social comparison can also change the user's idea of what counts as enough exercise. A personal target may once have felt reasonable. After seeing higher results from others, the same target may seem too low. The user raises the standard even when the original level was suitable.

This process may repeat. Each new comparison introduces a higher number, longer distance, or harder routine. The user may feel that personal effort is always behind someone else. Satisfaction becomes difficult because there is always another record to exceed.

Comparison with past personal records can create similar pressure. The user may treat an earlier best result as the standard for every later workout. The comparison is still social in a wider sense because the person is judging the current self against an ideal version of the self.

A personal best often happens under special conditions. The user may have slept well, followed an easy route, or trained during a less stressful period. Later conditions may be different. The number remains visible, while the context is forgotten.

A slower result can then feel like decline. The user may try to repeat the earlier record even when the

body needs lighter exercise. The past self becomes another competitor.

Social comparison may also affect users who do not openly join rankings. A person can compare silently through online posts, screenshots, and group conversations. No one needs to directly criticise the user. The person may still feel pressure from the repeated display of high activity.

People often use others as a guide when they are unsure about their own standards. Fitness tracker data look clear, so another person's results may seem like useful evidence. The user may copy a target without knowing whether it fits personal health, training history, or daily life.

This can lead to exercise plans based on imitation. A beginner may copy the weekly distance of a skilled runner. A person with poor recovery may follow a daily challenge designed for more active users. The target comes from comparison rather than personal assessment.

Social approval can also affect rest. A user may worry that friends will view a low activity record as laziness. The person may hide rest days or continue light exercise to keep the record active. Exercise becomes part of maintaining a social image.

Some users begin to present themselves as disciplined fitness participants. Shared records support this identity. Once other people know them through exercise posts, reducing activity may feel difficult. The user may fear questions, judgment, or loss of praise.

This pressure may remain even after exercise becomes tiring. The person continues to share completed workouts because stopping would conflict with the image already created. The social meaning of the data makes change harder.

7.2 Gamified Tracker Design

Fitness trackers often use features from games to encourage regular activity. These features include daily streaks, activity rings, badges, levels, challenges, rankings, visual celebrations, and reminders. The user receives a clear sign after completing a target.

Game-like design can make exercise more interesting. A simple walking goal may feel easier when progress is shown through a ring or bar. A badge can mark an achievement and give the user a reason to continue. The problem appears when the reward system creates fear of loss or a constant need for completion.

Daily streaks record how many days the user has met a target without a break. A short streak may encourage a person to build a routine. A long streak can carry strong emotional value. The number shows time, effort, and regularity.

The longer the streak becomes, the harder it may feel to stop. Missing one day does not only mean lower activity. It removes a record built over many days or months. The user may exercise mainly to avoid losing that record.

This fear can affect decisions during illness, injury, or fatigue. A person may complete a short workout only to keep the streak alive. The activity may not support health at that moment. Its main purpose is to protect the digital record.

A streak also changes the meaning of rest. Rest is no longer a normal part of training. It becomes an event that breaks continuity. Even planned recovery may feel like a failure because the system values daily completion.

Activity rings create a similar effect. A ring usually fills as the user reaches a step, calorie, standing, or exercise target. The open part remains visible until the goal is complete. This incomplete image can create tension.

A nearly completed ring may be especially difficult to leave open. The user can see that only a small amount of activity is missing. Walking for a few more minutes seems like an easy way to remove the discomfort. The person may do this even when tired or ready to sleep.

The reward comes at the moment the ring closes. The application may show movement, colour, sound, or a congratulatory message. This response creates a clear emotional difference between completion and non-completion.

The user may begin to seek the feeling attached to the closed ring. Exercise becomes a way to obtain the

visual reward. An open ring feels unfinished, while a closed ring brings relief.

This structure can support all-or-nothing thinking. A day with 95 percent completion may still look incomplete. The system gives special attention to the final step, not to the effort already made. The user may learn that partial activity has little value until the target is fully reached.

Notifications add pressure during the day. A tracker may tell the user that activity is below the usual level, that a ring is still open, or that only a small amount of movement is needed. These messages are designed to bring attention back to the goal.

A reminder may be helpful when the user has forgotten to move. It can also interrupt rest, work, meals, or social time. The message does not always know whether the user is tired, ill, injured, or facing other duties.

The wording of notifications can affect emotion. A message such as "You can still do it" may sound supportive. A user who is already anxious may read it as pressure. The message suggests that leaving the goal incomplete is a choice that should be corrected. Repeated reminders keep the unfinished target active in the user's mind. A person may have accepted that the goal will not be reached, but each notification brings the issue back. The user may feel watched or judged by the device.

Some applications compare the current day with the user's usual performance. A notification may say that activity is lower than normal. This can create concern even when the lower level has a clear reason. The user may feel pushed to maintain the usual number every day.

Maintaining the same level is not always suitable. Exercise needs change with sleep, stress, health, work, and recovery. The application often has limited information about these conditions. Its reminder is based on a simple difference between current and past data.

Badges and rewards can encourage users to complete special goals. A badge may be given for a longer distance, a set number of workouts, or a holiday challenge. These rewards make progress visible and can create a sense of achievement.

The reward may also raise the exercise standard. After one badge is earned, another harder challenge appears. Users may feel that stopping at the earlier level means losing momentum. The system keeps producing new tasks.

A challenge may not match the user's training plan. A person may already need recovery but still try to earn the badge before it expires. The limited time increases pressure. The user may add activity quickly rather than adjust the goal.

Time-limited challenges can create urgency. The badge disappears if the target is not met within the set period. This makes the unfinished task feel like a lost opportunity. Users may exercise more than planned because the reward will not remain available.

Digital rewards can also reduce the value of activities that are not well recorded. Stretching, balance work, slow movement, and some types of strength exercise may produce fewer steps or calories. The tracker gives less visible reward for them.

Users may choose activities that fill rings faster or produce larger numbers. The device's measurement system begins to shape the exercise routine. What can be counted receives more attention than what fits the body.

Some users may shake the wrist, walk indoors without purpose, or record a different activity type to increase the numbers. These actions show that completing the game target has become separate from meaningful exercise.

The user is no longer only trying to improve health. The person is trying to satisfy the rules of the system. The data target remains important even when the action used to reach it has little exercise value.

Rankings and challenges can also combine game design with social pressure. Users may receive points based on steps or active minutes. A leaderboard shows who has collected the most. This gives exercise a competitive structure.

Competition can increase effort, but it may also encourage users to ignore personal limits. A person may continue moving because another user is close

behind. The decision is based on the ranking rather than tiredness or pain.

Loss can be more powerful than reward. A user who has already gained a high position may fear falling. A person with a long streak may fear losing it more than they enjoy maintaining it. The wish to avoid loss can keep the user active under unsuitable conditions.

Gamified design can also make users feel that the tracker has given them a duty. A target appears each morning and remains until it is completed. The user may experience the goal as a task assigned by an external authority.

The application usually presents the target as positive and achievable. It may not explain that goals should be changed when physical or daily conditions change. Users may treat the default number as a health requirement.

This is common with step targets. A fixed target may be presented to users with very different bodies, work patterns, and health conditions. The simple number looks universal, even though personal needs differ.

Users who cannot reach the target may feel that they are failing at health. The system does not need to use direct criticism. The unfinished ring, missing badge, or broken streak already gives the result a negative form.

Game features can also weaken internal motivation. A user may begin walking because it feels pleasant or helps reduce stress. After repeated rewards, the person may focus more on points and completion. The activity feels less meaningful when the reward is removed.

A walk without the tracker may seem wasted because it does not add to the ring or streak. The user may feel less interested in movement when the device is unavailable. This shows that the external reward has started to replace the personal value of exercise.

7.3 Individual Psychological Differences

Fitness tracker data do not produce anxiety in every user. Personal psychological traits affect how the data are understood. A low score may be ignored by

one person and checked repeatedly by another. The difference is often linked with the user's general response to uncertainty, health, performance, and bodily feelings.

Trait anxiety refers to a stable tendency to experience worry across many situations. A person with higher trait anxiety may notice possible threats more quickly. Unclear information may feel harder to tolerate.

Fitness tracker data contain many small changes. Heart rate rises and falls. Sleep scores differ across nights. Exercise performance changes across days. A user with higher trait anxiety may view these changes as signs that something needs immediate attention (Salkovskis et al., 2002).

The person may find it difficult to wait for a longer pattern. One unusual result feels important enough to check at once. The user may review earlier records, search online, or repeat the measurement.

Trait anxiety also affects how people respond to uncertain explanations. A high heart-rate reading may have several common causes. The user may still focus on the most threatening cause because it feels safer to prepare for danger.

A normal later result may not fully remove the worry. The person may wonder whether the device missed the problem or whether the unusual value will return. This makes repeated checking more likely.

The user may also worry before exercise begins. A low recovery score can create an expectation that the workout will go badly. The person watches the body closely and notices every sign of tiredness.

This expectation can affect the exercise experience. Normal breathing and muscle effort may feel more serious because the user is already alert. The data shape attention before any real problem appears.

Health anxiety creates a more direct concern with physical illness. A person with health anxiety may often fear that normal body changes show a hidden medical problem. Fitness trackers provide a constant stream of information that can feed this fear.

Heart-rate data are especially important in this pattern. A small increase in resting heart rate may be

read as evidence of heart disease. A brief irregular reading may cause fear even when it comes from movement or poor sensor contact.

Sleep and oxygen data can create similar reactions. A lower sleep score may be treated as a sign that the body is failing to recover. A single oxygen reading outside the usual range may lead to repeated checking and online searching.

Fitness trackers do not provide a full medical examination. Their results may still look medical because they use health terms, graphs, ranges, and warnings. A user with health anxiety may give these signs more meaning than they deserve.

Reassurance often has only a short effect. The user may see a normal reading and feel calm. Later, a different number restarts the worry. The person then needs another check to feel safe.

Some users may visit several applications, websites, or devices to compare results. The aim is to find certainty. Different readings create more doubt and may increase anxiety.

Health anxiety can also make exercise itself feel risky. A person may fear that a high heart rate during activity is dangerous. The user may stop often to check the device. Exercise becomes less natural and more closely watched.

Other users respond in the opposite way. They may continue exercising because the device says the reading is normal, even when they feel pain or dizziness. The user trusts the number more than the physical warning.

Perfectionism has a strong link with tracker-related anxiety because fitness applications present clear goals and records. A perfectionist user may treat these numbers as fixed demands. Meeting most of a target does not feel enough.

The person may set strict rules about steps, calories, exercise time, or weekly distance. These rules are followed even when daily conditions change. Reducing the target feels like lowering personal standards.

Perfectionist users often connect achievement with self-worth. A completed goal shows discipline. A missed goal suggests weakness. This gives tracker data a personal and moral meaning.

A small decline in performance may cause strong disappointment. The user may focus on the difference from the best result and ignore the useful parts of the workout. Satisfaction depends on exact completion or improvement.

Perfectionism can also lead to overcorrection. A missed target may be followed by extra exercise. A lower score may lead to a harder session. The user tries to remove the imperfect result through more effort.

This pattern may continue even when the person is tired. Rest feels acceptable only when it follows a completed plan or receives support from the device. Unplanned rest may cause guilt.

Body dissatisfaction can make users more sensitive to calorie, weight, and activity data. A person who feels unhappy with body shape may view exercise numbers as proof of whether the body is being controlled.

Calorie estimates may receive too much attention. A high number can bring relief because it suggests that enough energy has been used. A low number may create fear that the workout was ineffective.

The user may connect missed exercise with immediate body change. A low step count can lead to fear of weight gain. A rest day may feel unsafe because it seems to reduce control over appearance. Body dissatisfaction also increases comparison. The user may look at the exercise records of people with a preferred body shape and believe that copying their activity will produce the same result. Differences in genetics, diet, health, and daily life receive less attention.

Online fitness content often links a certain body shape with discipline and success. A user who does not match this image may blame insufficient exercise. The tracker becomes a tool for constant correction.

This can create a strict link between eating and exercise. Food may be judged according to how much activity has been recorded. The user may feel that calories need to be earned or cancelled through movement.

A lower calorie count may then affect eating choices and mood. Exercise is used to control fear about the

body. The person may continue despite fatigue because reducing activity feels more threatening.

Low trust in bodily signals is another important factor. Some users find it hard to judge tiredness, hunger, pain, effort, or recovery. They may feel unsure about what the body needs.

Fitness trackers offer clear answers. A readiness score tells the user whether to train. A heart-rate zone suggests whether the intensity is correct. A sleep score tells the person whether rest was sufficient.

These numbers can be helpful, but strong dependence may weaken personal confidence. The user stops practising the skill of noticing and interpreting bodily feelings. Decisions are passed to the device.

A person may feel tired but continue exercising because the tracker gives a positive score. Another person may feel well but avoid activity because the recovery number is low. The device's result is treated as more valid than the lived experience.

Low trust in bodily signals can also increase anxiety when the device is unavailable. Without the tracker, the user may not know whether exercise is safe, useful, or intense enough. The person may feel unable to judge when to stop.

The user may cancel a workout after forgetting the device. Exercise without data feels uncertain. Even when the activity is completed, it may not feel valid because no number confirms it.

This dependence can make small differences between feeling and data difficult to manage. If the body feels well but the score is poor, the user does not know which source to trust. The conflict creates doubt and repeated checking.

Individual factors can overlap. A perfectionist user may also have health anxiety. A person with body dissatisfaction may also depend heavily on calorie data. Trait anxiety can make all of these concerns harder to control.

The same tracker feature may then affect several fears at once. A low activity score may suggest poor discipline, possible weight gain, and declining health. The emotional effect becomes stronger

because the number touches several areas of self-evaluation.

Past exercise experiences may also shape reactions. A person who has experienced injury, illness, major weight change, or loss of fitness may be more alert to negative data. A lower score can bring back fear linked with the earlier event.

The user may try to prevent the earlier problem from returning through constant monitoring. Data checking feels protective. The person believes that close attention will make it possible to notice danger early and keep control.

This belief can make it difficult to reduce tracker use. Removing the device may feel like losing protection. The user continues to monitor even when the data create more anxiety than useful guidance.

Personal beliefs about discipline also matter. Some users believe that strong self-control means never missing exercise. They may see tiredness as an excuse and rest as weakness. Tracker goals fit easily into this belief.

A completed streak becomes proof of strong character. A broken streak threatens that image. The user may continue exercising to protect a personal belief about who they should be.

People who view health in more flexible terms may respond differently. They can accept that activity changes across days and that rest has value. They are more likely to use data as a guide rather than a final judgment.

Users with rigid beliefs may have more difficulty accepting normal variation. The tracker gives exact numbers to beliefs that were already strict. The device does not create the whole problem, but it provides daily material through which anxiety can be expressed.

8. Reducing Exercise Anxiety Triggered by Tracker

Data

Reducing tracker-related exercise anxiety does not require users to stop using fitness devices completely. The main issue is not the presence of data but the role given to the data. A tracker can record activity and help users notice broad changes. It cannot give a complete judgment about health,

exercise quality, or personal discipline. Users need to keep the device in a limited role and take back control over exercise decisions.

This change may be difficult for people who have used trackers for a long time. Daily goals, scores, rings, and streaks may already be part of their routine. Sudden removal of the device can create more uncertainty. A gradual change is often more practical. Users can reduce checking, adjust targets, turn off selected reminders, and pay more attention to physical feelings during exercise.

8.1 Treating Fitness Data as Reference Information

Fitness data should be treated as information that supports judgment, not as the final judgment itself. A step count can show how much movement a device recorded. It cannot decide whether the day was healthy or productive. A calorie estimate can offer a rough picture of energy use. It cannot fully measure the value of a workout.

This difference needs to be clear in daily use. Users can ask what a number actually shows before reacting to it. A lower step count means that fewer steps were recorded. It does not automatically mean that the user was lazy. The person may have completed strength training, spent time recovering from illness, or had work that limited movement.

A low exercise score also has a limited meaning. It may reflect shorter activity, slower speed, or lower intensity. It does not show that the whole session was useless. Light exercise may improve mood, reduce stiffness, or help the body recover. These effects may not appear clearly in the tracker.

The same rule applies to positive data. A high step count does not prove that the body is fully healthy. A completed ring does not mean that more exercise is always suitable. A high recovery score does not remove the need to notice pain, illness, or unusual tiredness.

Users can reduce the power of a single number by looking at longer periods. One day of low activity gives little information about a person's usual habit. One slow run does not show a clear loss of fitness. A weekly or monthly pattern often gives a more useful view.

Longer patterns should still be read with context. A lower activity week may happen during travel, illness, examination periods, or heavy work. The number becomes more meaningful when the reason behind it is included.

Users can also change the language they use when reading data. Instead of saying, "I failed today," the person can say, "I did less activity today." Instead of saying, "My fitness is getting worse," the user can say, "My pace was slower in this session." This language keeps the judgment close to the actual result.

A tracker report should not be used to judge character. Exercise data show recorded behaviour, not personal worth. Missing a target does not prove a lack of discipline. Completing a target does not make a person better than others. Removing this moral meaning can reduce guilt and self-criticism.

Some users may need to review which tracker functions are truly useful. A runner may benefit from distance and pace but feel anxious about calorie estimates. Another user may find heart-rate data useful during exercise but become worried by daily recovery scores. It is reasonable to hide or ignore data that create pressure without giving useful guidance.

The user can choose a smaller group of indicators. This reduces the amount of information that needs to be checked. It also lowers the chance that several scores will create conflicting messages.

Medical-looking information needs extra care. Heart rate, blood oxygen, sleep stages, and stress scores may appear precise, but consumer devices have limits. A single unusual reading should not be treated as a diagnosis. Repeated symptoms, pain, dizziness, breathing problems, or other clear physical signs need proper medical attention rather than endless device checking.

The aim is not to distrust every number. It is to place each number within a wider judgment. Data, physical feelings, daily conditions, and personal exercise history need to be considered together.

8.2 Accepting Measurement Limits and Daily Variation

Tracker data are not perfectly stable. Devices may record the same activity in different ways. Wrist movement, skin contact, device position, exercise type, and software settings can affect the result. Estimates such as calories, sleep stages, stress, and recovery also depend on calculation methods.

Users may become less anxious when they understand that a number can contain error. A sudden change does not always show a real change in the body. The device may have collected a weak signal or interpreted movement incorrectly.

This is especially important when comparing different devices. A smartwatch, exercise machine, phone application, and chest strap may give different results. The difference does not always mean that one result is completely wrong. Each device may use a different sensor or formula.

Searching for one perfectly correct number can increase anxiety. The user may compare several sources and become more confused. It is often more useful to follow a general pattern from the same device than to compare every result across different systems.

Daily variation in the body also needs to be accepted. Heart rate can change with sleep, stress, temperature, hydration, caffeine, illness, medication, and emotion. Running pace can change with weather, route, muscle tiredness, and motivation. Sleep quality can change even when the same bedtime routine is followed.

These changes do not always need correction. The body is not expected to produce the same result every day. A lower score can be part of ordinary variation rather than a sign of failure.

Users who expect stable data may feel that every change needs an explanation. This search can continue for a long time because some changes have no clear single cause. Learning to leave small differences unexplained can reduce the need for constant control.

A practical rule is to avoid making a strong judgment from one reading. A single low recovery

score may be noted without changing the whole exercise plan. A single slow run may be accepted without adding extra training. Repeated changes over time may deserve more attention, but even then the wider situation matters.

Users can also set a normal range rather than expect one exact result. Heart rate, sleep time, step count, and pace may move within a range across ordinary days. Thinking in ranges makes small changes less threatening.

Exercise progress should also be understood as uneven. Improvement can include periods of faster performance, stable performance, and temporary decline. Rest, illness, work pressure, and training load may affect the pattern. A flat or lower period does not remove all earlier gains.

Users may keep simple notes beside the data. A note such as “poor sleep,” “hot weather,” “muscle pain,” or “busy workday” can remind the person that numbers are connected with real conditions. This can prevent a lower result from being treated as a personal failure.

Acceptance of variation also applies to body weight and appearance. Weight may change across days because of water, food, sleep, and other ordinary factors. Exercise data cannot fully control these changes. Trying to correct every small difference through extra activity can increase anxiety.

8.3 Using Flexible Goal Ranges

Fixed goals are easy to understand, but they can become rigid demands. A user who sets 10,000 steps may feel that 9,500 steps are not enough. A person who plans thirty minutes of exercise may dismiss a twenty-minute session. Goal ranges can reduce this sharp division between success and failure.

A range allows several results to be acceptable. A daily walking goal might be set between 7,000 and 10,000 steps. An exercise plan might include twenty to forty minutes depending on energy and time. This gives the user room to adjust without treating the change as failure.

Goal ranges should reflect personal conditions. Age, health, exercise experience, work, sleep, injury history, and available time all matter. A target

copied from a friend, online post, or device default may not fit the user.

Targets can also differ across days. A demanding workday may need a lower activity goal. A weekend may allow more time. A day after intense exercise may be used for light movement. The plan does not need to stay identical to remain consistent.

Weekly goals may be less stressful than strict daily goals. A weekly plan gives users space to move activity between days. Missing one session does not create an immediate failure if the plan can be adjusted later.

This adjustment should not turn into punishment. A missed workout does not need to be repaid through a very hard session. The aim is to keep the routine workable, not to correct every gap.

Users can include different types of exercise in the goal. Walking, strength work, mobility exercises, stretching, cycling, and recreational activity can all have value. A plan based only on steps or calories may ignore useful activities that the tracker records poorly.

Process goals can also reduce pressure. Instead of aiming only for a certain calorie number, the user may focus on preparing for exercise, completing a warm-up, or moving at a comfortable intensity. These goals depend more on behaviour than on an uncertain device estimate.

A flexible plan should include lower-demand options. On a tired day, the user may choose a short walk, gentle stretching, or full rest. These choices are part of the plan rather than signs that the plan has failed.

Targets also need regular review. A goal that once supported motivation may later create pressure. The user can lower, pause, or remove it. Changing a target is not the same as giving up. It can show that the person is responding to current needs.

Some trackers allow users to change daily goals, but the application may still celebrate only full completion. Users need to decide what counts as a successful day for themselves. The device's visual result does not need to control that decision.

8.4 Combining Data with Bodily Feelings

Bodily feelings provide information that a tracker cannot fully record. Fatigue, pain, breathing, mood, muscle soreness, energy, and enjoyment all affect whether exercise is suitable. Users can learn to check these signals before, during, and after activity.

Before exercise, the person can notice sleep quality, general energy, illness, pain, and emotional pressure. A tracker score may be considered, but it should not replace this basic check. A high readiness score does not mean that pain should be ignored. A low score does not always mean that all movement should stop.

During exercise, breathing and effort can guide intensity. The user can ask whether the movement feels controlled, whether pain is increasing, and whether the body can maintain the activity safely. The heart-rate number may support this judgment, but it should not be the only guide.

Pain needs careful attention. Normal muscle effort is different from sharp, sudden, or increasing pain. A user who is focused on closing a ring may ignore this difference. Pausing or stopping can be a reasonable decision even when the target remains incomplete. Mood also matters. Exercise can support emotional health, but a routine driven by fear may feel tense and forced. If the person spends the whole session watching the screen and worrying about results, the activity may not provide the expected mental benefit.

After exercise, users can review how the body feels rather than only check the final score. Questions about energy, comfort, mood, pain, and recovery may give useful information. A session with a modest calorie number may still feel positive and suitable.

Building trust in bodily signals takes time. People who have relied heavily on devices may feel uncertain without numbers. They can begin with short periods of exercise in which the screen is not checked. The data can be reviewed after the session instead.

Users may also choose some activities without tracking. A walk, stretching session, or recreational game can be completed without recording every

detail. This helps the person experience movement as real and valuable even when no digital record is created.

The aim is not to believe every physical feeling without question. Feelings can also be affected by anxiety and expectation. The user needs a balanced judgment. When feelings and data conflict, it may be useful to slow down, review the context, and avoid an immediate extreme response.

Clear and repeated physical symptoms need professional assessment. Tracker data should not be used to dismiss pain, dizziness, faintness, or breathing difficulty. The device also should not be used to diagnose serious illness from one unusual result.

8.5 Limiting Repeated Checking and Notifications

Repeated checking keeps attention fixed on exercise data. It may reduce worry for a few minutes, but it often makes the next urge to check stronger. Limiting access can help users learn that uncertainty does not always need an immediate answer.

A user can begin by setting specific times to view data. Step counts might be checked once in the afternoon and once in the evening. Exercise results can be reviewed after the session rather than every few minutes during it. Sleep data may be checked after the person has already noticed how rested they feel.

Fixed checking times reduce impulsive use. The person knows that the data can be reviewed later. Each anxious thought does not need to lead directly to opening the application.

Users can also remove the tracker display from the main phone screen. Health applications may be placed in a less visible folder. This small change adds a pause between the urge and the action.

Notifications need careful review. Reminders about unfinished goals, low activity, streaks, challenges, and rankings may not be necessary. Turning them off can reduce the sense that the device is assigning tasks throughout the day.

Heart-rate alerts may have a different purpose from activity reminders. Users should understand what each alert means before changing it. Alerts that

relate to a known medical need may require professional guidance. General fitness reminders can often be adjusted without losing important information.

The user may also remove social ranking notifications. Updates about another person moving ahead can create pressure that has little connection with personal health. Leaving a leaderboard or group challenge may be useful when competition leads to excessive exercise.

A gradual reduction in checking may be easier than a complete stop. A person who checks twenty times a day can aim for fewer checks rather than demand perfect control at once. Each reduction gives the user a chance to tolerate the discomfort.

The urge to check may rise at first. The person may worry that something important will be missed. Waiting for a short period can show that anxiety can fall without viewing the number.

During the waiting period, attention can move to another activity. The user may continue working, talk with someone, drink water, or notice physical feelings without opening the application. The goal is not to force anxiety away but to avoid making checking the only response.

Some users may choose tracker-free periods. The device can be removed during meals, social events, rest periods, or selected exercise sessions. This creates parts of the day in which movement and rest are not constantly measured.

A tracker-free rest day may feel difficult for users who fear losing data. It can also show that the body continues to function without constant monitoring. The absence of a record does not remove the value of rest or daily activity.

8.6 Including Rest and Recovery in Exercise Plans

Rest should be planned with the same seriousness as exercise. It is not an empty space between useful sessions. The body needs time to recover from physical stress. Sleep, nutrition, light movement, and reduced training load all support this process.

Users can place rest days in the schedule before fatigue becomes severe. A planned rest day often

creates less guilt than an unplanned stop. The person knows that recovery is part of the routine. Rest does not need to produce a high activity score. The user may complete ordinary daily movement without trying to close every ring. A low number can be accepted as part of the recovery plan.

Some people prefer active recovery, such as gentle walking or stretching. This can be useful when it is chosen for comfort. It becomes less useful when the person turns it into another demanding workout to protect the exercise record.

The purpose of the day needs to remain clear. If the goal is recovery, activity should not keep rising only because the tracker shows an open ring. The user can decide the limit before beginning.

Sleep should not be reduced to complete exercise goals. Late-night walking or extra training may close a ring but shorten recovery time. This trade may create poorer performance and more anxiety the next day.

Users can also change or pause targets during illness and injury. Keeping the same goal under every condition encourages rigid behaviour. A temporary reduction protects health and may support a safer return to exercise.

Returning after a break should be gradual. The user does not need to recover all missed distance, steps, or calories. The body may need time to rebuild tolerance. Trying to restore old numbers at once can increase pain and disappointment.

Recovery also has a mental side. Constant planning, checking, and comparison can make exercise feel like work. Time away from the application may help the user recover interest in movement.

The tracker can support recovery when it is used carefully. A long-term pattern of poor sleep, unusual fatigue, or reduced performance may be worth noticing. The user should avoid letting one score decide whether rest is allowed.

Personal feelings can provide enough reason to reduce exercise. The person does not need a low digital score to justify rest. Tiredness, pain, low energy, and emotional strain are valid parts of exercise planning.

8.7 Returning Attention to Enjoyment and Personal Needs

Exercise has value beyond numbers. It can improve mood, create social contact, reduce stiffness, support daily function, and provide enjoyment. These effects may not appear as high scores, but they often help people maintain activity over time.

Users can ask why they chose an activity before looking at the tracker result. A walk may offer quiet time. Swimming may feel calming. Strength training may help with daily tasks. A group activity may provide social connection. These reasons keep exercise connected with life rather than only with data.

Enjoyment does not mean that every session must feel easy or pleasant. Some exercise requires effort. The difference lies in whether the user still feels a sense of choice. Anxiety-driven exercise feels compulsory. The person continues mainly to avoid guilt, fear, or an unfinished record.

Choosing activities that fit personal interests can strengthen internal motivation. A user does not need to follow the activity that produces the largest calorie number. An exercise that is enjoyable and sustainable may be more useful than a demanding plan that creates constant pressure.

Personal needs also change. A person may want more intense training during one period and lighter movement during another. Work, family life, health, age, and emotional state can change what is realistic. Exercise plans need to move with these conditions. Users can broaden their idea of success. A successful session may mean stopping before pain increases. It may mean choosing light movement after poor sleep. It may mean completing a short walk despite a busy day. It may also mean taking a needed rest day without trying to correct it later.

Exercise identity can also become more flexible. A person can value being active without needing to prove it every day. Missing a workout does not remove the identity. A lower score does not cancel earlier effort.

Social comparison may become less powerful when users define personal reasons for exercise. Another

person's step count or running pace may have little value for a user with different needs. The question is not whether the number is higher but whether the activity is suitable.

Users may also choose not to share every workout. Private exercise can reduce concern about how the record appears to others. The activity can be completed without the need for likes, praise, or ranking.

The device should support exercise rather than decide its meaning. A user can wear a tracker and still leave a goal incomplete. The person can record

a low score and choose rest. Exercise can also be completed without a device and still count as real movement.

When anxiety remains strong, affects eating or sleep, causes exercise through pain, or makes rest feel impossible, support from a mental health professional may be needed. The problem is no longer only about device settings. It may involve perfectionism, health anxiety, body dissatisfaction, or a rigid link between exercise and self-worth.

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