



## D2.1

# METHODS AND TOOLS FOR COLLECTING DATA AND CHILDREN ´S FEEDBACK AND INSTRUCTIONS

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## Understanding Children’s Expectations and Preferences for a Dog-Themed Exercise Game: A Qualitative Study to Inform Mobile Game Design for 9–14-Year-Olds

### Abstract

Promoting physical activity among children and adolescents is a critical public health goal, particularly in an era of increasing digital engagement and sedentary behaviors. Mobile games offer a promising avenue to motivate and engage young people in physical activity through interactive and emotionally resonant experiences. Leveraging the natural affinity many children have for dogs, this study explored children’s expectations, preferences, and creative ideas for a dog-themed exercise mobile game. Using a **qualitative phenomenological design**, we collected data from 81 children aged 9–14 through a series of open-ended questions. Thematic analysis revealed rich insights into children’s motivations for physical activity, their relationships with dogs, and their visions for an engaging and meaningful game experience. Key themes included the desire for cooperative play with dogs, adventure and exploration elements, rewards that strengthen the emotional bond with their virtual dog, educational content about health and exercise, and the importance of visualizing emotions during gameplay. Participants also emphasized the value of nature-based activities, storytelling, humor, and opportunities for creative expression within the game. These findings offer valuable guidance for designing mobile exercise games that resonate with children’s emotional worlds, foster sustained engagement, and promote both physical activity and well-being. Integrating children’s voices into the game design process ensures that the resulting product will not only entertain but also meaningfully support the development of healthy, active lifestyles.

**Keywords:** dog-themed mobile game, physical activity, children, adolescents, qualitative research, phenomenology, game-based learning, thematic analysis, well-being, user-centered design

## 1. Introduction

The increasing prevalence of sedentary lifestyles among children underscores the urgent need for innovative approaches to promote physical activity (Ahn et al., 2019). Mobile exergames, which integrate physical exercise with digital gaming, offer a promising avenue to engage children in enjoyable and health-enhancing activities by transforming sedentary screen time into active play (Ravnløkke & Binder, 2023). This approach leverages the widespread appeal of screen-based technology among children to foster improved cardiovascular health, combat obesity, and enhance overall well-being (Velde et al., 2020; Ağça et al., 2023). However, for these active video games to be truly effective, it is crucial to understand children's expectations and preferences, as their engagement is paramount to the sustained impact of such interventions (González et al., 2021). Exergames provide an interactive gaming experience that necessitates physical movements, thereby serving as a means of engaging in physical activity, though their effectiveness can be limited by technical constraints and challenges in long-term engagement (Al-walah et al., 2023). Therefore, designing exergames that are both engaging and effective in promoting physical activity requires a deep understanding of user motivations and preferences (Schwarz et al., 2021; Richards, 2024). This is particularly relevant given that many children, especially those from low socioeconomic backgrounds, do not meet recommended physical activity guidelines, and mobile health interventions are often preferred over traditional methods (Schwarz et al., 2022).

The present study was conducted as part of the preliminary research phase for the development of a mobile exercise game specifically designed for 9–14-year-old children. The game concept centers on fostering physical activity through fun, interactive experiences featuring dogs as key companions. To inform the game's design, we explored children's attitudes toward exercise, their experiences with dogs, and their ideas regarding enjoyable game features, desired challenges, rewards, and emotional experiences within the game. Through thematic analysis of their responses to a series of open-ended questions, this study aims to provide actionable insights that can guide the creation of an engaging, age-appropriate, and motivating digital game that supports both physical well-being and positive emotional connection.

## 2. Literature Review

### 2.1. Mobile Games for Health and Exercise

The proliferation of mobile devices has paved the way for exergames to become an accessible tool for promoting physical activity, particularly among youth who frequently engage with digital media (Velde et al., 2020). These games can transform passive screen time into active engagement, thereby offering a novel strategy to address the growing public health concern of childhood inactivity (Velde et al., 2020). Specifically, exergaming provides an immersive experience where children can participate through body movements, which has been shown to improve physical fitness, motor skills, and even cognitive functions (Chen et al., 2023). Exergames convert physical activity into game activities, promoting both physical fitness and adherence to training routines (Vandoni et al., 2021).

This gamified approach leverages intrinsic and extrinsic motivators to sustain engagement, making exercise more enjoyable and less like a chore (Marín-Lora et al., 2023). Furthermore, gamification within exergames can significantly enhance the enjoyment of fitness activities, thereby promoting consistent physical engagement among children and adolescents (Gkintoni et al., 2024). However, it is crucial for such systems to provide direct and specific feedback to children's physical movements to effectively initiate and maintain their engagement in active play, as many current interactive exercise systems fail to do so (Ravnløkke & Binder, 2023). Consequently, future physical activity applications must be specifically tailored to their target populations, incorporating behavioral change techniques and health education, along with gamification elements to enhance effectiveness (Caillaud et al., 2022).

This includes considering the cognitive challenge level of physical activity within exergames, which can significantly influence children's executive functions and attention (Christensen et al., 2024). The design of effective exergames must therefore consider not only the physical demands but also the cognitive engagement required, particularly to avoid issues like cybersickness that can arise from rapid movement in virtual environments (Marín-Lora et al., 2023). Moreover, incorporating motivational features and addressing the psychological outcomes associated with physical activity through gamified systems can significantly boost participation and long-term adherence (Hariri & Stone, 2023; Farič et al., 2020). The integration of virtual reality technologies within exergames further enhances immersion, offering novel avenues

for promoting physical activity and mitigating sedentary behaviors, particularly given the success of popular titles like Pokémon Go and the widespread adoption of VR headsets (O’Loughlin et al., 2019; Vandoni et al., 2021) (Farič et al., 2020). This technological advancement allows for the creation of more dynamic and interactive physical activity strategies, making exercise more enjoyable and cost-effective (Lee & Jin, 2022).

Research indicates that early exergames, such as Dance Dance Revolution and Wii Fit, demonstrably increased energy expenditure by up to 300% above resting levels, achieving at least moderate-intensity physical activity (McMichael et al., 2020). This highlights the potential for exergames to fulfill recommended daily activity levels through engaging digital experiences (Liang et al., 2023). However, despite these promising results, the sustained engagement with exergames remains a challenge, necessitating further research into design elements that can foster long-term participation and enjoyment (Farič et al., 2020). Studies show that interest in active video games can wane over time, unlike traditional physical activities, underscoring the need for diverse interactive programs and social involvement to maintain engagement (Kowaluk & Woźniewski, 2019). Therefore, understanding user expectations and preferences is crucial for designing exergames that not only attract but also retain the interest of young users (Swindle et al., 2021). This is particularly pertinent in the context of mobile exergames, where portability and accessibility facilitate regular interaction, but design must overcome potential issues such as cybersickness that could detract from the experience (Benzing et al., 2018). This involves carefully balancing stimulating content with comfort to ensure that the immersive qualities of VR enhance rather than hinder sustained engagement (Farič et al., 2020). The increasing market for VR hardware and software underscores the potential for immersive experiences to drive physical activity, with projections indicating significant growth in the coming years (McMichael et al., 2020). This growth highlights the importance of understanding how to leverage VR exergames effectively to promote physical activity, especially given that such immersive environments have been shown to increase perceived enjoyment and reduce perceived exertion during exercise (McMichael et al., 2020).

## **2.2. Children's Game Preferences and Engagement Factors**

The evolving landscape of digital play has significantly shifted children's expectations

for interactive experiences, with many gravitating towards games that offer dynamic narratives, customizable avatars, and opportunities for social interaction. These preferences extend to exergames, where elements such as compelling storylines, achievable goals, and personalized feedback mechanisms are critical for sustained engagement (Polechoński et al., 2020; Kowaluk & Woźniewski, 2019). For instance, providing custom feedback and coaching features in mobile health applications is crucial for enhancing physical activity among young adults, suggesting similar benefits for children's exergames (Chatterjee et al., 2021). Moreover, tailoring workout sessions to individual fitness conditions and interests, incorporating dynamic features, and gradually releasing application features can significantly enhance user motivation and retention in gamified exercise systems (Zhao et al., 2020). The collaborative integration of academic and game design expertise, alongside early involvement of the target population, proves instrumental in developing effective VR exergames that resonate with adolescents (Farič et al., 2020). This collaborative approach ensures that the game design aligns with user expectations, fostering a sense of ownership and increasing the likelihood of sustained engagement (Farič et al., 2020; McMichael et al., 2020).

Fun and enjoyment are consistently highlighted as fundamental aspects that drive engagement in VR exergames among adolescents, with features like rewards, increasing challenges, and social or multiplayer options being highly desired (Farič et al., 2020). This indicates a strong preference for games that offer a sense of progression, social connection, and immediate gratification through intrinsic and extrinsic motivators (McMichael et al., 2020). Similarly, parents also perceive the integration of physical activity into screen time as a positive development, particularly when games offer elements such as levels, competition, social interaction, and skill-based challenges (McMichael et al., 2020). These design principles collectively suggest that successful exergames for children must seamlessly integrate elements of play, social interaction, and progressive challenges to effectively promote sustained physical activity (Kowaluk & Woźniewski, 2019). Furthermore, providing choices in game offerings and incorporating social support mechanisms are key components for fostering intrinsic motivation, which is crucial for the long-term sustainability of exergaming (O'Loughlin et al., 2019). Therefore, understanding these preferences and integrating them into mobile exergame design is crucial for developing effective interventions that address declining physical activity levels in children.

## **2.3. Qualitative Research in Game Design**

Qualitative methodologies, such as interviews and focus groups, are invaluable in eliciting nuanced insights into user preferences, allowing designers to move beyond quantitative metrics and understand the "why" behind engagement (Farič et al., 2020). This formative research approach, involving direct interaction with target users, allows for the identification of critical features and design elements that enhance enjoyment and adherence to exergames (Farič et al., 2020). Such methods can uncover underlying motivations and barriers to participation, which are often missed by broader surveys or observational studies (Farič et al., 2020). By engaging directly with the target demographic, researchers can gather rich, descriptive data on children's perceptions of dog-themed exergames, informing the development of mechanics and aesthetics that resonate with their specific interests and developmental stages (McMichael et al., 2020). This approach is particularly vital for designing active games, where understanding the specific game mechanics and features valued by experts and players alike can significantly impact success and engagement (Martinez, 2022).

## **3. Methods for Collecting Data and Feedback**

### **3.1. Research Design**

This study employed a qualitative research design, specifically utilizing semi-structured interviews and focus groups to gather in-depth insights into children's expectations and preferences for a dog-themed exercise game. This methodology was chosen to elicit rich, nuanced data on their ideal game features, thematic elements, and motivational factors, which are often missed by quantitative approaches (Rytterström et al., 2024). The iterative nature of qualitative inquiry allowed for an emergent understanding of user needs, enabling the refinement of design considerations as data was collected and analyzed (Rytterström et al., 2024). This approach ensures that the resulting game design is user-centered, directly addressing the desires and motivations of the target demographic, thereby increasing the likelihood of sustained engagement (Farič et al., 2020). Furthermore, incorporating these preferences into the design process is critical for developing exergames that are both enjoyable and effective in promoting physical activity, particularly as gamification has been identified as a potent instrument for health promotion among children and

adolescents (Gkintoni et al., 2024). The integration of participatory design methods, involving children as co-creators, is crucial for developing successful digital interventions in health, ensuring that the final product aligns with their interests and developmental stage (Leong et al., 2021; Watkins et al., 2023). Such participatory approaches are particularly vital for mobile exergames, where sustained engagement depends heavily on aligning with the unique cognitive and social preferences of the adolescent user group (Farič et al., 2020). Moreover, understanding child perspectives is essential for designing effective digital media, while children's experiences offer unique insights into engagement (Richards, 2024).

### **3.2. Participants and Recruitment**

A purposive sampling strategy was employed to recruit children aged 9–14 years from diverse backgrounds to ensure a broad spectrum of perspectives on mobile exergame design (Corepal et al., 2018).

### **3.3. Data Collection**

Data were collected through a series of open-ended questions designed to elicit rich descriptions of participants' attitudes, preferences, and creative suggestions. The researchers utilized both individual semi-structured interviews and focus group discussions to gather comprehensive qualitative data (Martins et al., 2022). Individual interviews provided an intimate setting for children to express personal opinions and elaborate on their unique experiences without peer influence, while focus groups facilitated dynamic discussions, allowing for the emergence of shared perspectives and the exploration of diverse viewpoints through group interaction (Watkins et al., 2023). This dual approach ensured a robust data set, combining individual depth with the richness of collaborative ideation (Chorlton et al., 2022).

### **3.4. Data Analysis**

A thematic analysis approach (Uehara et al., 1996) was used to identify common patterns and key themes across participants' responses, providing insights to inform the game's design and development. This systematic process involved familiarization with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and finally, producing the report. This rigorous analytical

framework ensured that the findings accurately reflected the participants' perspectives and provided actionable insights for the design of the dog-themed exergame.

## 4. Transforming Children's Feedback into Ideas

### 4.1. Participant Characteristics / Demographics

A total of **80 participants** from various linguistic backgrounds took part in this study. The language distribution among participants was as follows: **36 participants** completed the survey in **Turkish (TR)**, representing the largest group; **26 participants** responded in **Italian (IT)**; **11 participants** completed the survey in **Greek (EL)**; **4 participants** used **Spanish (ES)**; and **3 participants** responded in **Portuguese (PT)**. This distribution indicates a diverse sample, reflecting a wide range of cultural and linguistic perspectives.

#### 4.1.1. Participants' Dog Ownership and Reported Breeds

A total of 45 participants reported owning a dog, whereas 36 participants reported not owning a dog. Among those who owned a dog, 36 participants specified their dog's breed, while 45 participants did not provide this information. The reported breeds included Golden Retriever (reported by 3 participants), Maltese (2), Terrier (2), Mixed breed/Meticcio (several variations reported by 5 participants in total), Malinois (1), Labrador (including variations such as "lavrador" and "Assomiglia a un Labrador") (3), Jack Russell (2), Collie (1), German Shepherd/Pastore Tedesco/Γερμανικός ποιμενικός (3), Yorkshire Terrier ("Yorki") (1), Pincher (1), Caniche (1), Beagle mix (1), Caucasian Shepherd (1), and several other non-standard or descriptive responses such as "street dog", "unknown breed", or personalized descriptions (e.g., "Meticcio (female), named Molly"). This diversity in responses indicates both a variety of dog breeds and a portion of participants owning mixed-breed or unidentified dogs.

#### 4.1.2. Outdoor Exercise and Play Frequency Among Participants

A total of 81 participants responded to the question regarding outdoor exercise or play frequency. 41 participants reported exercising or playing outdoors a few times a week. 23 participants reported exercising or playing outdoors every day. 9 participants reported exercising or playing outdoors rarely. 8 participants reported exercising or

playing outdoors occasionally.

#### 4.1.3. Frequency of Playing or Exercising with Dogs

A total of 81 participants responded to the question regarding the frequency of playing or exercising with their dog. **26 participants reported playing or exercising with their dog every day. 23 participants reported playing or exercising with their dog a few times a week. 18 participants reported playing or exercising with their dog rarely. 14 participants reported playing or exercising with their dog occasionally.**

#### 4.1.4. Frequency of Playing Video Games or Mobile Games

A total of 81 participants responded to the question regarding the frequency of playing video games or mobile games. **30 participants reported playing video or mobile games every day. 30 participants reported playing video or mobile games a few times a week. 15 participants reported playing video or mobile games rarely. 6 participants reported playing video or mobile games occasionally.**

#### 4.1.5. Preferred Types of Games Among Participants

A total of 81 participants responded to the question regarding the types of games they enjoy the most. **41 participants reported enjoying sports games. 38 participants reported enjoying adventure games. 20 participants reported enjoying simulation games (e.g., pet care games). 16 participants reported enjoying puzzle games. 6 participants reported enjoying other types of games.**

### 4.2. Children Ideas

#### 4.2.1. Perceived Importance of Physical Exercise

A thematic analysis was conducted on the participants' responses to the open-ended question "Why do you think physical exercise is important for you?". Out of 81 participants, a rich variety of motivations and perspectives emerged. These responses demonstrated that participants perceive physical exercise as a highly valuable practice offering physical, mental, emotional, and social benefits.

A large number of participants emphasized that physical exercise is essential for maintaining bodily health, preventing diseases, and staying physically fit. Statements such as "Physical exercise helps me keep my body healthy" and "It is important to be

physically active in order to stay healthy” illustrate this strong association between exercise and health maintenance. Similarly, responses such as “It makes me strong and healthy” and “Physical activity helps me protect myself from future illnesses” further underscore the preventive and protective role attributed to regular physical activity.

Beyond its physical effects, many participants described the mental and emotional benefits they derive from exercise. Engaging in physical activity was portrayed as a way to enhance mood, reduce stress, and foster overall emotional well-being. This was reflected in statements such as “Even though I get tired when I exercise, it makes me happy”, “Exercising relaxes me and clears my mind”, and “It makes me feel more energetic and happy”. Some participants conveyed this sentiment in simple terms, as in “Because it’s fun”, suggesting that exercise positively influences their emotional state.

Enjoyment emerged as a significant intrinsic motivator. Several participants reported engaging in physical activity because they found it pleasurable and fun. Responses such as “Because I have fun and it makes me feel better”, “Because it’s fun and I like moving my body”, and “I do it to have fun with my friends” highlighted that the experience of exercise itself, independent of its outcomes, contributes to their motivation to remain active.

Many participants also viewed physical exercise as a means to build physical strength and improve fitness. Statements such as “I exercise to become physically stronger”, “It makes me strong”, “I work out to build muscle and stay fit”, and “I regularly exercise to strengthen my body” reflect a personal drive toward achieving strength and physical conditioning goals.

Finally, though less frequently mentioned, the social aspect of exercise appeared meaningful for some participants. Responses such as “I enjoy exercising with my friends”, “It’s a good way to meet with friends and have fun”, “Together with my friends, we motivate each other to stay active”, and “Exercise also contributes to my social life” illustrated that, for certain individuals, exercise functions as an opportunity to foster social connections.

In summary, the analysis revealed that participants perceive physical exercise as a

multifaceted activity that supports both physical and mental well-being, offers intrinsic enjoyment, facilitates personal fitness goals, and, for some, enhances social engagement. These findings suggest that interventions promoting physical activity should not only focus on its health benefits but also consider the psychological, social, and experiential dimensions that contribute to sustained engagement in exercise.

#### **4.2.2. Perceived Enjoyment of Physical Activities**

A thematic analysis was conducted on the participants' responses to the open-ended question *"Can you describe some activities or exercises you enjoy doing?"*. A total of 81 participants shared a wide range of activities, reflecting highly diverse preferences and motivations for engaging in physical activity. The responses demonstrated that for many individuals, physical activity is closely tied to personal enjoyment, creativity, and social connection, in addition to promoting physical well-being.

A large portion of participants mentioned team sports such as football, basketball, and volleyball as their most enjoyable physical activities. Statements like *"I love playing football with my friends"*, *"Basketball is my favorite, we go to the court after school"*, and *"I really enjoy playing football because it's so fun when unexpected things happen during the game"* reflected the strong appeal of team-based, dynamic sports that offer opportunities for both movement and camaraderie.

In addition to structured sports, many participants described enjoying unstructured outdoor play and nature-related activities. Several responses emphasized a connection to the natural environment through activities such as walking, hiking, birdwatching, and cycling. For example, one participant stated *"I love watching birds, going on nature walks, mountain biking, and planting trees. Doing sports without harming nature makes me happy"*. Another shared *"I enjoy long walks in nature, where I can imagine new stories as I walk"*. These responses suggest that nature-based activities provide not only physical benefits but also a space for mental restoration and creativity.

Movement-oriented indoor activities also featured prominently. Dance was frequently mentioned as a joyful form of expression, with statements such as *"I love dancing — when I play music, I immediately start moving"*, and *"Dancing with my friends or at home with YouTube videos makes me feel so free"*. Similarly, activities like skipping

rope, using VR games for physical engagement (e.g., boxing simulators), and Pilates were highlighted as enjoyable ways to stay active, often in informal settings. One participant shared *“I really like moving with VR games — for example, I play a boxing simulation, and it’s quite exhausting”*, demonstrating how technology is also shaping contemporary physical activity experiences.

Pet-related activities emerged as another source of physical enjoyment. Several participants described playing with their dogs as a favorite way to be active: *“Running with my dog in the garden is one of my favorite activities”*, and *“I go for quiet walks with my dog in the evenings”*. Such responses illustrate how daily life interactions with pets can naturally foster physical activity.

Moreover, some participants expressed a clear preference for individual exercises that promote relaxation or mindfulness, such as solo walks, stretching, and core exercises. Statements like *“I enjoy going for solo walks with music in my headphones”*, and *“At home, I like doing sit-ups quietly or taking brisk walks to music without bumping into anyone”* reflected a desire to combine physical movement with personal reflection or stress relief.

In summary, the analysis revealed that participants engage in a broad spectrum of physical activities, from organized team sports to nature-based exploration, expressive movement through dance, technology-enhanced exercise, pet-related play, and mindful individual practices. Across these varied experiences, the common thread was the participants’ intrinsic enjoyment of movement, often intertwined with social connection, creativity, and emotional well-being. These insights underscore the importance of recognizing and supporting the diverse ways in which individuals can find joy in physical activity, suggesting that physical education and activity programs should embrace flexibility, creativity, and personal relevance to foster lifelong engagement.

#### **4.2.3. Perceived Post-Exercise Feelings**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“How do you feel after you’ve done some physical exercise?”*. A total of 81 participants provided rich and varied descriptions of their emotional, physical, and cognitive states following physical activity. Their responses highlighted the

multifaceted impact of exercise, encompassing physical sensations, emotional well-being, and enhanced self-perception.

Many participants described experiencing a strong sense of **happiness and relaxation** after exercising. Statements such as *“I feel very happy and good”*, *“After exercise, I feel more relaxed and happier”*, and *“I feel lighter, as if a burden has been lifted”* reflect the emotionally uplifting effects of physical activity. This sense of emotional well-being was further supported by responses like *“I feel calmer and can breathe more easily”*, and *“I become happier and more at peace — it’s like my body is saying ‘well done’.”*

Another common experience was a **feeling of renewal and increased energy**. Participants often reported that despite initial fatigue, exercise ultimately left them feeling refreshed and re-energized. For instance, one participant wrote *“I feel physically and mentally renewed. Exercise gives me energy, and being in nature helps me feel more peaceful”*. Similarly, another shared *“After exercising, I feel truly relaxed and more energetic. Especially after spending time with my dog, I feel great both physically and emotionally.”*

While **fatigue** was frequently mentioned, it was typically described as a **positive or satisfying kind of tiredness**. Responses such as *“I get tired but it’s a good tiredness. I feel happy, energetic, and successful”*, and *“I get tired but feel like I’ve achieved something”* illustrate this sentiment. This positive framing of post-exercise fatigue suggests that participants viewed it as a meaningful indicator of effort and accomplishment.

Participants also noted **enhanced cognitive clarity and focus** following exercise. Statements like *“My mind opens up. I can think more clearly and new ideas come to me”*, and *“I feel lighter and mentally more relaxed”* highlight the cognitive benefits associated with physical activity. These responses indicate that participants valued not only the physical outcomes of exercise but also its contribution to mental sharpness and creativity.

Additionally, several participants expressed a heightened sense of **self-efficacy and achievement**. For example, one participant shared *“Even though my muscles hurt, I tell myself ‘I worked hard’ and that makes me happy”*, while another wrote *“At first it’s hard, but in the end I feel very good and strong”*. Such reflections suggest that the

process of overcoming physical challenges through exercise fosters a sense of personal competence and empowerment.

In summary, the analysis revealed that participants experience a complex interplay of positive emotions, physical sensations, and cognitive shifts after engaging in physical activity. Feelings of happiness, relaxation, renewed energy, and mental clarity were predominant, while fatigue was generally perceived positively, reinforcing a sense of accomplishment. These findings emphasize that the benefits of exercise extend well beyond physical fitness, contributing meaningfully to emotional well-being and self-perception. Programs aiming to promote physical activity may benefit from highlighting these holistic post-exercise experiences to encourage sustained engagement.

#### **4.2.4. Perceived Importance of Physical Exercise for Dogs**

A thematic analysis was conducted on the participants' responses to the open-ended question *"Why do you think physical exercise is important for your dog?"*. A total of 81 participants provided rich and thoughtful insights into the value they attribute to physical activity for their canine companions. The responses reflected a strong awareness of the multifaceted benefits of exercise for dogs, encompassing physical health, behavioral regulation, emotional well-being, and enhanced human-animal bonding.

A large number of participants emphasized that physical exercise is essential for maintaining their dogs' **physical health and preventing obesity**. Statements such as *"So they don't get fat and can stay healthy and run a lot"*, *"Exercise is crucial so that dogs can remain fit and not gain weight"*, and *"Like humans, they need to move to stay healthy"* illustrated a clear understanding of exercise as a preventive health measure.

Participants frequently highlighted the importance of exercise in helping their dogs **release excess energy and achieve calmness**. Many noted that without sufficient activity, their dogs could become restless or disruptive. Responses such as *"My dog is very energetic — if he doesn't get enough exercise, he runs around the house and can be destructive"*, *"If my dog doesn't exercise, she gets restless at home. When we go out, she shines with happiness"*, and *"After running, my dog is much calmer and*

*sleeps better*” reflected this dynamic.

Closely related to this was the theme of **behavioral benefits**. Participants observed that regular physical activity contributed to improved behavior, including reduced excessive barking, less destructive behavior, and better overall temperament. Statements such as *“When my dog exercises, he barks less and behaves better”*, *“Without exercise, my dog chews on everything at home”*, and *“Exercise helps my dog be more relaxed and less mischievous”* underscored the behavioral advantages of keeping dogs physically active.

Additionally, participants recognized the role of exercise in supporting their dogs’ **happiness and emotional well-being**. Responses such as *“They feel happier when they move”*, *“When we play together, my dog looks so happy”*, and *“I think they would be unhappy without enough movement”* highlighted an empathetic awareness of the emotional needs of dogs.

Finally, several responses implied that physical activity contributes to strengthening the **bond between the dog and its owner**. For example, participants shared sentiments like *“If I had a dog, I would take long walks together”*, and *“I run with my dog to entertain him and make him happy”*. These reflections suggest that exercise is also valued as a shared experience that enhances companionship and mutual joy.

In summary, the analysis revealed that participants perceive physical exercise as a vital component of canine well-being, supporting not only physical health but also behavioral stability, emotional happiness, and the quality of the human-dog relationship. These findings highlight the importance of promoting regular physical activity for pets, both for their own benefit and as a means of fostering positive interactions between animals and their caregivers.

#### **4.2.5. Types of Activities and Exercises Enjoyed by Dogs**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“What kinds of activities or exercises does your dog enjoy?”*. A total of 81 participants provided diverse and vivid descriptions of their dogs’ favorite activities. The responses illustrated that dogs engage enthusiastically in a wide variety of physical and playful experiences, often shaped by their natural instincts, curiosity, and the quality of interaction with their human companions.

A dominant theme in the responses was **ball play**, particularly chasing, retrieving, and catching the ball. Statements such as *“My dog loves playing fetch. We throw the ball and he runs to bring it back”*, *“He really enjoys chasing the ball, especially in open spaces”*, and *“She gets so excited running after the ball — sometimes she even rolls in the grass afterward”* underscored the universal appeal of this simple yet highly engaging activity.

Participants also reported that their dogs enjoyed **running and open field play**. Responses like *“My dog loves running in open areas, especially among the trees”*, and *“Running freely outside is one of his favorite things”* highlighted the importance of opportunities for unstructured physical activity in nature.

**Walking** emerged as another widely appreciated activity. Many participants described how their dogs enjoyed long exploratory walks, often marked by intense sniffing and curiosity. Statements included *“Long walks are his favorite — he sniffs everything and never misses a thing”*, and *“My dog gets excited for our morning walks and loves exploring the surroundings”*.

**Water-based activities** were also mentioned with enthusiasm. Some dogs were described as loving to swim or play with water. Participants shared *“She loves playing with water — in summer she dances under the water hose”*, and *“My dog enjoys swimming at the beach during the summer”*, suggesting that water play provides both physical and sensory stimulation.

Several responses indicated that dogs enjoyed **scent-tracking and search games**. Examples included *“I hide something and my dog uses his nose to find it”*, and *“I think my dog would love tracking games where he searches for hidden items”*. These activities not only satisfy natural canine instincts but also promote mental engagement.

**Obstacle courses and interactive games** were also appreciated by some dogs. Participants mentioned *“Running agility tasks, jumping over obstacles”*, and *“I would set up obstacle courses — I think my dog would love that”*, reflecting an interest in providing varied and challenging forms of physical and mental activity.

Finally, many responses suggested that dogs derive great joy from **interactive play**

**with their owners**, reinforcing the emotional bond between humans and their pets. Statements such as *“When I come home, my dog jumps around asking me to take him out and play”*, and *“Playing fetch and going for walks together makes my dog so happy”* demonstrated how shared activities strengthen this connection.

In summary, the analysis revealed that dogs enjoy a broad array of activities, from high-energy ball play and running to exploratory walks, water games, scent-tracking, and interactive play. The common thread across these varied experiences was the importance of both physical stimulation and meaningful interaction with humans. These findings suggest that facilitating diverse and engaging activities for dogs not only supports their physical and mental well-being but also enhances the quality of their relationships with their caregivers.

#### **4.2.6. Perceived Post-Exercise Feelings of Dogs**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“How do you think your dog feels after exercising or playing?”*. A total of 81 participants provided rich and expressive observations of their dogs’ post-activity emotional and physical states. The responses offered a nuanced portrayal of how dogs experience and display the effects of exercise and play, reinforcing the emotional significance of these activities in their daily lives.

The most prominent theme across responses was that of **happiness and enjoyment**. Participants consistently described their dogs as visibly joyful and emotionally uplifted after exercising or playing. Statements such as *“My dog looks very happy after exercise — even when tired, there’s a sparkle in his eyes”*, *“She wags her tail and sometimes jumps on us after playing”*, and *“He smiles with his tongue out and looks completely content”* highlighted the strong positive emotional impact of physical activity.

Many participants also noted that their dogs showed signs of **positive tiredness** — a kind of satisfied fatigue that followed exertion. Responses included *“My dog gets tired but is happy, lying down with a wagging tail”*, *“Tired but clearly pleased — he stretches out on the floor with a smile”*, and *“She flops down after playtime, but you can see how much she enjoyed it”*. This theme reflects an understanding among owners that physical tiredness is an expected and healthy outcome of play and exercise.

A closely related theme was that of **relaxation and calmness**. Participants observed that their dogs often became more tranquil and peaceful after activity. Statements such as *“Relaxed and calm, sometimes curling up next to me”*, *“After playing, he sleeps soundly and looks so peaceful”*, and *“My dog seems very satisfied and calm after we exercise”* illustrated this post-activity state of contentment.

Another recurrent observation was that **dogs appeared emotionally fulfilled and mentally satisfied** after exercising. Participants noted that physical activity seemed to contribute not only to their dogs’ physical well-being but also to their emotional balance. For example, responses included *“Like humans, I think dogs feel happy and fulfilled after play”*, *“I believe my dog feels both happy and mentally relaxed after exercising”*, and *“She looks proud and joyful after finishing an active game”*.

Additionally, several responses suggested that post-exercise moments served to **strengthen the human-dog emotional bond**. Participants described affectionate behaviors such as dogs approaching them for closeness or affection after play. Examples included *“After playing, my dog lies next to me as if to share the happiness”*, and *“I think my dog would cuddle up with me after exercise, feeling happy and close”*. These moments reinforce the role of physical activity in deepening the connection between dogs and their owners.

In summary, the analysis revealed that participants perceive their dogs as experiencing a rich blend of happiness, positive tiredness, relaxation, and emotional satisfaction after engaging in exercise or play. These responses underscore that physical activity is not only beneficial for dogs’ physical health but also contributes significantly to their emotional well-being and the quality of their relationship with their human caregivers. Recognizing and fostering these experiences can further enhance the mutual joy and companionship shared between dogs and their owners.

#### **4.2.7. Perceived Benefits of Playing or Exercising Together with Dogs**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“How do you think playing or exercising together with your dog benefits both of you?”*. A total of 56 participants provided thoughtful reflections on the reciprocal benefits of joint physical activity and play. The responses illustrated that these shared experiences foster not only physical health but also emotional well-being and a

stronger human-animal bond.

A predominant theme across the responses was that **playing or exercising together strengthens the bond between the dog and the owner**. Participants frequently described how shared activities deepened their connection and mutual understanding. Statements such as *“It makes us better friends”*, *“Spending time with my dog helps us understand each other better”*, and *“We build a stronger bond by playing together”* highlighted the relational value of these interactions.

Participants also noted that **both the dog and the human experience greater happiness and enjoyment** through joint activity. Responses included *“We are both happier when we play together”*, *“It makes both of us feel good and more relaxed”*, and *“When I exercise with my dog, I find it more fun — and my dog seems happier too when I’m there”*. These reflections emphasize that joint activity is not only beneficial but also inherently enjoyable for both parties.

Another key theme was the **physical health benefits** gained by both the dog and the owner. Participants recognized that exercising with their dogs encouraged regular movement and supported well-being. Statements such as *“It helps both me and my dog stay healthy”*, *“We both get more active”*, and *“Together we stay fit and feel better”* underscored this mutual physical benefit.

Many participants described the **emotional and stress-relieving effects** of joint play and exercise. For example, *“Spending time with my dog helps me feel better when I’m stressed”*, *“Even when I’m upset, being with my dog calms me”*, and *“I feel so much better after playing with my dog”* revealed the powerful emotional impact of these interactions.

Participants also highlighted that **dogs provide social and emotional support**, especially when human social contact may be limited. Statements such as *“My dog is my only real companion at home — playing with him makes him happy and helps me feel less alone”*, and *“Without needing to talk, we understand each other through play”* reflect the deep companionship that dogs provide.

Finally, several participants noted that their dogs **motivate them to be more active and spend time outdoors**. For instance, *“I usually don’t go out much, but my dog*

*encourages me to get outside”, and “Playing with my dog makes exercise more fun for me”* illustrated how dogs inspire positive changes in their owners’ lifestyles.

In summary, the analysis revealed that playing and exercising together benefits both dogs and their owners in multiple ways: fostering emotional closeness, enhancing happiness, promoting physical health, providing emotional support, and motivating increased activity. These shared experiences contribute to the well-being of both humans and dogs, and highlight the reciprocal nature of the human-animal relationship. Encouraging such interactions can play a valuable role in supporting healthy and fulfilling lives for both pets and their caregivers.

#### **4.2.8. Memorable Experiences of Exercising or Playing with Dogs: A Thematic Analysis of Participants’ Responses**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“Can you share a memorable time you had fun exercising or playing with your dog?”*. A total of 49 participants shared vivid, heartfelt stories highlighting joyful, surprising, and emotionally meaningful moments experienced during play or exercise with their dogs. These accounts revealed not only the variety of shared activities but also the emotional depth and connection fostered through such experiences.

A dominant theme in the responses was the joy of **shared fun and laughter**. Many participants recounted playful, amusing moments that strengthened their bond with their dogs. Examples included *“One day while playing fetch in the garden, my dog brought the ball back so fast that I tripped while reaching for it. My dog stood beside me wagging his tail”,* and *“We both got completely covered in sand while playing at the beach — I laughed so much”*. Such moments of shared joy highlighted the role of play in enhancing mutual happiness.

Participants also described occasions where their dogs’ **unexpected behaviors brought surprise and delight**. Statements such as *“I threw the ball, but my dog chased a rabbit instead — I couldn’t stop laughing”,* *“During a walk in the rain, my dog jumped into the mud — we both ended up soaked and laughing”,* and *“While playing with a frisbee, my dog got tangled in bushes trying to retrieve it — it took us a while to get free”* illustrated how dogs’ spontaneity enriches these experiences.

Another key theme was the **emotional support and connection** felt during moments

of vulnerability. For example, one participant shared *“One day when I was very sad, my dog sensed it and just sat beside me instead of bringing the ball. I’ll never forget that moment”*. These responses reflected the deep empathy and emotional sensitivity dogs often display toward their human companions.

Many participants highlighted **memorable outdoor adventures** as particularly enjoyable. Responses included *“We went on a long hike in the forest; my dog dug a hole and excitedly tried to find a hidden ball”*, *“Running on the beach every summer is one of our favorite memories”*, and *“We explored a beautiful mountain trail, and my dog was so excited to discover everything around him”*. These stories emphasized the joy of shared exploration and discovery in natural environments.

Additionally, several participants described **overcoming small challenges together**, which further strengthened their bond. For instance, *“While swimming, my dog tried to pull me back as a game — we both ended up in the water”*, and *“I threw the ball too high, and my dog tried so hard to catch it mid-air — even when he missed, he looked so proud”*. These playful struggles fostered mutual trust and companionship.

In summary, the analysis revealed that participants’ most memorable experiences of exercising or playing with their dogs were characterized by shared joy, playful surprises, emotional connection, and outdoor adventure. These stories underscored how physical activity with dogs transcends mere exercise, serving as a rich source of happiness, bonding, and mutual understanding. Encouraging such meaningful interactions can greatly enhance the well-being of both dogs and their human caregivers.

#### **4.2.9. Perceived Elements that Would Make an Exercise and Well-Being Game Fun**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“What would make a game about exercise and well-being fun for you?”*. A total of 81 participants provided imaginative and detailed suggestions for designing an engaging and enjoyable game. The responses highlighted a rich variety of preferences, ranging from gameplay mechanics to aesthetic and narrative elements, all aimed at enhancing both fun and motivation.

A key theme across the responses was the inclusion of **missions and progression**

**systems.** Many participants expressed that advancing through levels, completing tasks, and unlocking new content would increase engagement. Statements such as *“It would be great to complete tasks and level up by imitating the character’s movements”*, *“I’d like to collect points and unlock new areas as I progress”*, and *“Challenging tasks that get harder as you advance would make the game fun”* reflected this preference.

Another prominent theme was the desire for **interactive play involving their dog or teamwork with the dog.** Participants envisioned game mechanics that would allow them to interact meaningfully with their dog during gameplay. For example, *“Tasks that keep both the dog and children active would be fun, like carrying a ball to a target”*, *“It would be fun to do parkour races with my dog”*, and *“Mini adventures where you complete missions with your dog would be super”* demonstrated this enthusiasm.

**Obstacle courses, races, and physically active gameplay** were also frequently mentioned. Participants valued the idea of a game that would encourage real-world movement and activity. Statements included *“Running, jumping, and overcoming obstacles would be fun”*, *“It should make you move — tasks that involve jumping and reflexes would be great”*, and *“An exercise game that really makes you move would be amazing”*.

Participants emphasized the importance of **colorful and appealing visual design** and **a positive game atmosphere.** Responses such as *“Cute characters, colorful worlds, and relaxing music would make it perfect”*, *“A bright, cheerful game with animals to rescue would be fun”*, and *“Nice graphics and fast-paced tasks would make the game exciting”* highlighted aesthetic preferences.

The theme of **nature and exploration** emerged strongly as well. Many participants expressed interest in a game that would allow them to explore natural environments. For example, *“Exploring nature and discovering new places with your dog would be fun”*, and *“A game that brings outdoor sports into an exciting adventure”* reflected this aspiration.

Participants also valued **educational elements**, suggesting that combining learning with play would enhance the game. Statements such as *“It would be great if the game*

*taught us what happens in our body during exercise”, and “Mini quizzes or informative moments would make the game both fun and educational”* illustrated this desire.

Additionally, the presence of **a narrative or adventure story** was considered important by many. Participants wrote *“The game should have a story — maybe you and your dog go to a magical land and complete missions”,* and *“A game with a story where we progress through challenges would be much more engaging”*.

Finally, participants consistently expressed that the game should encourage **real physical movement**. Responses such as *“It should really get you moving in real life”,* and *“A game that makes you exercise while having fun would be perfect”* underscored this core expectation.

In summary, the analysis revealed that participants envision an exercise and well-being game as an engaging blend of physical activity, interactive play with their dog, colorful and dynamic visuals, educational content, and an immersive narrative. Designing games that incorporate these elements can significantly enhance motivation and enjoyment, promoting sustained engagement in both digital and real-world physical activity.

#### **4.2.10. Preferred Challenges and Activities for an Exercise and Well-Being Game**

A thematic analysis was conducted on the participants’ responses to the open-ended question *“What kind of challenges or activities would you like to see in the game?”*. A total of 81 participants contributed creative and varied suggestions for designing engaging and dynamic game content. Their responses reflected a strong desire for physical activity, exploration, and interactive gameplay elements that foster both fun and well-being.

A dominant theme in the responses was the inclusion of **obstacle courses and races**. Many participants envisioned fast-paced challenges requiring agility and coordination. Statements such as *“There should be continuous obstacle running”,* *“Obstacle courses, races against time, and hurdles to jump over would be fun”,* and *“Timed runs with obstacle challenges would be exciting”* emphasized the appeal of physically demanding tasks.

Another key theme was **teamwork and cooperative tasks with the dog**. Participants

expressed great interest in game mechanics that would allow them to interact closely with their dog to complete challenges. For example, *“Activities where you and your dog must pass through obstacles together”*, *“Treasure hunts with scent-tracking tasks involving the dog”*, and *“It would be great to have missions requiring cooperation with the dog”* demonstrated this enthusiasm.

**Jumping, running, and skipping-based activities** also featured prominently. Participants valued dynamic, movement-driven gameplay that would keep them physically active. Responses included *“Jumping sections, races against time, and skipping rope competitions”*, and *“Tasks that make you run, jump, and collect items along the way”*.

**Exploration and adventure in natural environments** emerged as another major theme. Many participants wanted the game to incorporate outdoor exploration elements. Statements such as *“Discovering nature, taking photos of animals, and finding hidden symbols in the forest”*, and *“Exploring new places while running with the dog”* reflected this aspiration.

Participants also mentioned **scent-tracking, treasure hunts, and stealth missions** as exciting gameplay ideas. Responses included *“Hidden missions, treasure hunts with scent trails, and escaping from imaginary creatures”*, and *“Quietly following clues in the forest”*.

**Combining cognitive and physical challenges** was highlighted as particularly engaging. Participants suggested integrating puzzles with movement-based tasks. Examples included *“Solving a puzzle after running a parkour”*, and *“Using both physical agility and brainpower to complete tasks”*.

**Technological enhancements such as VR support** were also mentioned. Statements like *“VR-supported mini-games where you jump and move”* and *“Integrating technology to create a more immersive experience”* reflected this interest.

Some participants suggested adding **educational content** through quiz elements. For example, *“Combining movement tasks with quiz questions would be fun”*, and *“Learning about fitness while playing would be great”*.

Finally, **narrative-driven and atmospheric missions** were proposed. Participants

wrote *“Night runs, stealth missions, and story-based tasks would make the game exciting”*, and *“Having a story where we complete missions together would be really engaging”*.

In summary, the analysis revealed that participants would like to see a rich blend of physical challenges, cooperative play with their dog, nature exploration, cognitive tasks, and immersive storytelling in an exercise and well-being game. Designing games that integrate these elements can foster sustained motivation and enjoyment, promoting both physical activity and emotional engagement.

#### **4.2.11. Preferred Game Focus: Real-Life Activities versus Imaginative Adventures**

A thematic analysis was conducted on the participants' responses to the open-ended question *“Would you prefer the game to focus more on real-life activities you can do with your dog or on imaginative adventures?”*. A total of 81 participants provided insightful reflections, revealing diverse preferences and nuanced reasoning regarding the desired focus of an exercise and well-being game.

A significant portion of participants expressed a preference for **real-life activities**. They valued practical exercises that they could directly apply when interacting with their dog. Statements included *“I would prefer activities that I can actually do with my dog”*, *“Real-world activities would be better — not just throwing a ball, but discovering other things we can do together”*, and *“I prefer real activities because outdoor exercises are both beneficial and fun”*. Participants emphasized the practical, educational, and health-related benefits of this approach.

At the same time, a large number of participants favored a **combination of real-life and imaginative elements**. They suggested that integrating both approaches could maximize enjoyment and creativity. For example, *“Both would be nice — real activities are relatable, but imaginary ones would be more creative”*, *“It could start with real activities and then shift into dreamlike experiences”*, and *“Doing real-world tasks but in a fantasy setting would be very exciting”*. Many participants believed that blending the two would offer the best of both worlds.

Participants who preferred **imaginative adventures** highlighted their desire for creativity and fun. Responses included *“Imaginative adventures would be more exciting”*, *“Escaping from dragons with my dog sounds much more fun”*, and *“Tasks*

*that stimulate imagination would make the game more engaging*". For these participants, the ability to experience fantastical scenarios with their dog was a highly attractive feature.

Participants also reflected on the different roles that real-life and imaginative activities could play in the game. Many viewed **real-life activities as educational and beneficial for health**, while seeing **imaginative adventures as opportunities for fun, excitement, and creativity**. Statements such as *"Real activities are good for learning, but imaginative ones are more exciting"*, and *"Real tasks teach us something, but fantasy elements keep it fun"* illustrated this perspective.

In summary, the analysis revealed a balanced and thoughtful distribution of preferences among participants. While some prioritized real-life activities for their practical value, others were drawn to the creative possibilities of imaginative adventures. Many participants favored a combination of both, suggesting that a hybrid approach could provide an optimal gaming experience. Designing games that offer flexibility between realistic and fantastical elements may therefore best meet the diverse expectations of players.

#### **4.2.12. Desired Rewards and Achievements to Motivate Continued Gameplay: A Thematic Analysis of Participants' Responses**

A thematic analysis was conducted on the participants' responses to the open-ended question *"What rewards or achievements in the game would motivate you to keep playing?"*. A total of 81 participants shared creative and motivating ideas, revealing a broad spectrum of preferences for in-game rewards and progression systems.

A major theme was the appeal of **points and achievement unlocks**. Participants valued systems that track progress and reward accomplishments. Statements included *"Collecting points and unlocking achievements would be great"*, *"There should be a leaderboard so I can see who's first"*, and *"It would be motivating to see that I'm doing well"*. Social comparison through leaderboards was also a motivating factor for some.

**Dog-related rewards** were highly valued. Participants wanted to earn items that would enhance their dog's appearance or abilities. For example, *"Winning new toys or collars for my dog"*, *"Unlocking new dance moves for the dog"*, and *"Earning special*

*animations or outfits for my dog*” demonstrated this enthusiasm.

**Unlocking new areas and exploration zones** was another motivating element. Participants expressed a desire to progress through the game by gaining access to new environments. Statements included *“Discovering new nature areas and earning eco-friendly rewards”*, and *“Unlocking new regions to explore with my dog”*.

**Cosmetic customization for both player and dog** was frequently mentioned. Participants enjoyed the idea of earning *“skins, clothes, and fun visual effects”*, *“new outfits for both me and my dog”*, and *“character customization options”*.

**Badges and collectible rewards** also emerged as key motivators. Participants suggested *“colorful badges”*, *“titles like ‘Muscle Expert’ or ‘Mindful Mover’”*, and *“hidden badges that unlock as the bond with the dog grows”*.

Many participants valued rewards that **strengthen the bond with their dog**. For example, *“Rewards that help me feel more connected to my dog”*, *“Stories that unlock as I bond more with my dog”*, and *“Emotional rewards for playing together”* illustrated this theme.

Some participants wanted **learning-based badges**, reflecting their desire for meaningful rewards. Statements included *“Badges that teach me something”*, and *“Learning while earning rewards would be great”*.

Participants also suggested **fun surprise features and playful abilities**. For instance, *“Special powers for the dog, like super speed or invisibility”*, *“The ability for my dog to talk in the game”*, and *“Unlocking fun effects like new animations”*.

**Real-world meaningful rewards** were also mentioned by a few participants. They suggested *“eco-friendly products or nature conservation tasks”* as in-game rewards.

In summary, the analysis revealed that participants would be motivated to continue playing an exercise and well-being game by a rich variety of rewards: from points and achievement systems to dog-related customization, exploration opportunities, badges, and playful abilities. Designing games that offer layered and emotionally meaningful rewards can foster deep engagement, enhance player satisfaction, and strengthen the bond between humans and their canine companions.

#### 4.2.13. Importance of Displaying Emotional States of Both Player and Dog in the Game

A thematic analysis was conducted on the participants' responses to the open-ended question *"How important is it for the game to show how both you and your dog feel during different activities?"*. A total of 81 participants shared thoughtful and emotionally rich reflections, overwhelmingly highlighting the significance of incorporating visible emotional expressions into the game design.

The vast majority of participants stated that it is **very important** for the game to display emotional states. Responses such as *"Very important! Since my dog cannot talk, it would be great to see how he feels"*, *"Extremely important — understanding my dog's emotions would help me know how to act"*

#### 4.2.14. Participants' Creative Ideas for Designing a Part of the Game: A Thematic Analysis of Participants' Responses

A thematic analysis was conducted on the participants' responses to the open-ended question *"If you could design one part of the game, what would it look like or include?"*. A total of 81 participants shared highly creative and imaginative ideas, envisioning a rich variety of gameplay experiences that could enhance engagement, learning, and emotional connection in an exercise and well-being game.

A major theme was the inclusion of **obstacle courses and races**. Many participants imagined dynamic sections where they and their dog would physically interact with the environment. Statements included *"An obstacle race with my dog, with mud and water everywhere!"*, *"A racecourse where both I and my dog jump over obstacles to reach the finish line"*, and *"We'd compete in a fun race while discovering new places"*.

**Nature exploration and discovery** emerged as another key theme. Participants wanted game sections that would allow them and their dogs to explore natural environments. For example, *"Exploring nature, discovering new plants and animals"*, *"A secret garden where we find healing plants and gain powers"*, and *"Going on night walks in a forest, relying on my dog's senses"* reflected this desire for immersive natural experiences.

**Eco-friendly and environmental tasks** were frequently suggested. Responses included *"Recycling missions or tree planting in game areas"*, and *"Earning eco-*

*friendly rewards by protecting nature”.*

Participants valued sections that would **enhance emotional connection and bonding** with their dog. For instance, *“An ‘Emotion Garden’ where flowers grow as we exercise and my dog smiles”*, and *“Activities that strengthen the bond between me and my dog”* highlighted this focus.

**Educational and scientific sections** were also popular. Participants imagined learning through play, with ideas such as *“A mini science lab showing what happens to the body after exercise”*, and *“Animations that explain how muscles and the heart respond to movement”*.

**Fantasy and imaginative gameplay** featured prominently. Participants suggested *“A dream forest with magical creatures that change shape”*, *“A ‘Dog Planet’ where dogs rule and we help them”*, and *“Rescue animals through exercise, and they join us in play”*, reflecting a strong desire for playful, story-driven content.

**Rescue missions and healing animals** appeared in several responses. Statements included *“A ‘Rescue Animals’ section where you reach animals through exercise and heal them”*, and *“Saving animals and gaining new friends through active tasks”*.

Participants also envisioned **night walks and sensory-based challenges**. For example, *“A silent night walk where you trust your dog’s senses”*, and *“Navigating invisible paths under the moonlight”* illustrated this idea.

**Music and dance sections** were proposed as fun, social experiences. Responses included *“All dogs and children dancing to music, with the best choreography winning”*.

Some participants suggested **social and cooperative tasks**, such as *“Sending points to lower-ranked friends to encourage them”*, reflecting a desire for community-oriented features.

Finally, **puzzle solving and hidden exploration** elements were frequently mentioned. Statements like *“Finding lost balls and dancing each time we find one”*, and *“Exploring secret areas with my dog and solving puzzles together”* demonstrated a strong interest in interactive and mentally engaging gameplay.

In summary, the analysis revealed that participants envision a rich and diverse range of game sections, combining physical activity, exploration, education, emotional bonding, and imaginative storytelling. Designing games that incorporate these elements can create a deeply engaging and meaningful experience that supports both physical well-being and emotional connection between humans and their canine companions.

#### **4.2.15. Final Ideas and Suggestions for the Game: A Thematic Analysis of Participants' Responses**

A thematic analysis was conducted on the participants' responses to the open-ended question *"Do you have any final ideas or suggestions for the game?"*. A total of 81 participants shared a wide variety of creative and insightful suggestions aimed at enhancing the enjoyment, inclusivity, and emotional impact of an exercise and well-being game.

A prominent theme was the desire for **rewards and customization options for the dog**. Participants suggested *"Rewards for my dog"*, *"Winning toys or clothes for my dog"*, and *"Being able to dress up my dog"* as motivating and fun features.

Several participants emphasized that the game should be **free or easily accessible**. For example, *"If such a game exists, I would prefer it to be free"*, and *"It should be available to everyone"* reflected this concern.

**Fun and humorous moments** were widely appreciated. Participants wrote *"There should be lots of fun and funny moments — like chubby dogs running"*, and *"Maybe missions where you solve funny situations with your dog"*.

**Eco-friendly and nature-focused themes** emerged as another key suggestion. Statements included *"It would be fun to have missions about protecting nature"*, and *"A section called 'Secret Animals' where the dog helps find them"*.

**Hidden discoveries and special missions** were proposed. Participants enjoyed the idea of *"Hidden animals and secret places in the game"*, and *"Tasks where you and your dog explore and find hidden surprises"*.

Some participants suggested **technological enhancements** such as *"If the game integrates with smartwatches or VR, it would be amazing"*.

**Daily progress and story elements** were popular ideas. Statements included *“It would be nice to have a ‘Journal’ section summarizing what we learned”*, and *“Winning story pages after completing daily tasks”*.

**Special events and celebrations** were also proposed. For example, *“Occasional special events like nature walks or dog costume parties would be great”*.

Participants valued having **quiet, reflective moments** in the game. They suggested *“Some sections should be quiet and contemplative”*, and *“Not everything should be solved through talking”*.

Some expressed a preference for a **slow-paced and calm experience**. For instance, *“This game should be slow and calming”*, and *“Not everyone likes fast games — it should be relaxing”*.

**Emotional animations and animal friendship stories** were highly appreciated. Participants wrote *“At the end of the game, small animations about animal friendships would be lovely”*, and *“Every time, we could see a different animal story”*.

**Dynamic weather and seasonal content** were also suggested. Statements included *“It would be great to have different weather and seasons — like running in the snow”*.

Participants wanted a **photo corner and achievement gallery**. For example, *“A photo corner where we can display our achievements with our dog”*, and *“A leaderboard showing who completed which tasks”*.

Finally, there was strong interest in having an **online multiplayer option**. Statements included *“There should be an online option to play with friends”*, and *“We should be able to race against other players’ dogs”*.

In summary, the analysis revealed that participants envision the game as a playful, emotionally rich, and socially engaging experience that integrates fun, learning, environmental awareness, and meaningful human-dog interaction. Their suggestions underscore the importance of balancing humor, depth, and community in game design, fostering a holistic experience that supports both well-being and enjoyment.

## 5. How We Use the Study to Translate into Children’s Ideas

The findings of the study provide a meaningful foundation for designing engaging and emotionally resonant experiences that align with how children perceive physical exercise and their relationships with their dogs. Children see exercise not only as a way to stay healthy but as something joyful, relaxing, and socially enriching. Translating these insights into design concepts allows for the creation of an interactive, well-being-oriented game that reflects children’s real motivations, emotions, and imaginations.

Children’s responses showed that they associate physical activity with health, happiness, and strength. Many described exercise as something that makes them feel good, relaxed, and proud. This suggests that a successful design should highlight the immediate, positive sensations that follow movement rather than focusing on long-term health outcomes. Visual and auditory cues such as gentle music, bright energy trails, or cheerful expressions can help reinforce these positive emotions. The feeling of “good tiredness” that many children mentioned can be represented through calm, rewarding end-of-level moments that acknowledge their effort and teach them to view physical exertion as fulfilling.

Enjoyment emerged as a powerful motivator. Since children described sports, dancing, and free outdoor play as their favorite activities, the game should integrate both structured challenges and open-ended play. Opportunities for dancing, jumping, and exploring with a dog can increase engagement and allow children to express creativity through movement. Because many participants emphasized the joy of being in nature, the game world should include parks, forests, and beaches, capturing the sense of freedom and imagination that real outdoor play provides.

The findings also underline the importance of social connection and companionship. Children often mentioned friends and dogs as central to their motivation to move. Reflecting this, the game should emphasize cooperation and shared achievement. Tasks completed together with a dog—such as obstacle runs, scent trails, or playful challenges—can reinforce empathy and mutual joy. A visible bond indicator can reflect how trust and connection grow through consistent interaction, turning shared activity into an emotionally meaningful experience.

Children’s awareness of their dogs’ well-being is another key insight. They understood that exercise helps dogs stay healthy, calm, and happy. This awareness

can be transformed into educational gameplay, teaching empathy and responsibility through balanced activity. Animations showing the dog's energy level, rest, and happiness can guide players toward healthy behavior, demonstrating the importance of caring for another living being.

In their creative suggestions, children described features that would make a game fun—progression systems, colorful worlds, rewards, and opportunities for personalization. They wanted both real-life activities they could try with their dogs and imaginative adventures filled with fantasy elements. A balanced approach can combine both: starting with familiar, real-world movements and gradually introducing dreamlike worlds and missions, keeping the experience both relatable and inspiring. Progress through levels can unlock new areas, outfits for the dog, or short story segments, helping players feel a sense of growth and discovery.

Children also expressed that seeing emotions within the game would make it more meaningful. They wanted to understand how both they and their dogs feel during different moments. Including a simple emotional feedback system that shows happiness, calmness, or excitement can help players develop emotional awareness and empathy, strengthening the connection between physical activity and emotional well-being.

Overall, translating the study's findings into design means creating an experience that mirrors children's real perspectives on exercise—as something joyful, social, and nurturing. The envisioned game becomes more than a digital activity: it is a shared journey where movement, imagination, and companionship come together to promote health, empathy, and lasting engagement.

## 6. THEO Videogame

Below is a summary of the recommendations made by the project partners during the development of the THEO videogame and their implementation status:

1. **Language Translations:** Multiple language options were included to make the game more accessible and engaging for users from different countries. *(Implemented)*
2. **Integration of the Child Character:** The child character was successfully integrated into the game narrative and interactive scenes. *(Implemented)*

3. **Swimming Scene – Exercise Theme (Child–Dog Interaction):** A swimming scene emphasizing physical exercise was added, featuring playful interaction between the child and the dog. *(Implemented)*
4. **Google Fit Integration:** The game was connected with Google Fit to monitor and encourage players' physical activity levels. *(Implemented)*
5. **Augmented Reality (AR) Integration:** AR elements were incorporated to enhance immersion and allow real-world interactive experiences. *(Implemented)*
6. **Dog Breed Diversity:** Various dog breeds were included to increase user engagement and allow personalization. *(Implemented)*
7. **Treasure Hunt – Additional Exercise Game:** A “Treasure Hunt” mini-game was developed to promote movement and exploration through an exercise-based gameplay experience. *(Implemented)*

## 7. Annex: THEO Videogame (Android Version)

The Android version of the **THEO videogame** can be accessed through the following link:

[Download THEO Videogame \(Android\)](#)

This version includes all recent updates and implemented partner recommendations, such as language translations, Google Fit integration, AR features, and the new exercise-themed “Treasure Hunt” mini-game.

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