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# Comparative Effects of Different Coaching Styles on Motor Skill Acquisition among Hearing-Impaired Students

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**Abstract**

Motor skill acquisition is crucial for physical, cognitive, and social development, especially among students with hearing impairments who rely heavily on visual and kinesthetic cues. This study examined the comparative effects of autocratic, democratic, and laissez-faire coaching styles on motor skill acquisition in hearing-impaired male students enrolled in the Diploma in Special Education at Government Degree College of Special Education, Dera Ghazi Khan. A quasi-experimental pre-test & post-test design was employed with 30 purposively selected participants, divided equally into three coaching groups. A standardized motor skill test battery measured performance accuracy, coordination, and technique before and after a 6-week intervention.

Descriptive statistics indicated that all groups improved significantly ($p < 0.001$), with the democratic group achieving the highest gain (Mean = 25.60), followed by autocratic (Mean = 15.30) and laissez-faire (Mean = 9.20). One-way ANOVA confirmed significant differences in post-test scores among the groups ($F = 45.62$, $p < 0.001$). Post-hoc Tukey HSD tests revealed that democratic coaching outperformed both autocratic and laissez-faire styles, while autocratic was more effective than laissez-faire.

The findings suggest that democratic coaching, which combines structured guidance with active learner participation, is most effective for enhancing motor skills in hearing-impaired students. Autocratic coaching supports immediate skill improvement but limits autonomy, whereas laissez-faire provides minimal gains. These results highlight the importance of inclusive and participatory teaching strategies. Future research should explore larger samples, long-term retention, hybrid coaching approaches, broader age ranges, and motivational outcomes to optimize adapted physical education.

**Keywords:** Motor skill acquisition, Hearing-impaired students, Coaching styles, Democratic coaching, Autocratic coaching, Laissez-faire coaching, Adapted physical education

## Introduction and Background of the study:

**Introduction:** Motor skill acquisition is fundamental to physical, cognitive, and social development in educational settings, forming the basis for lifelong participation in physical activity and sport (Magill & Anderson, 2017). Within school environments, the quality of

instruction and feedback provided by teachers and coaches strongly influences how efficiently learners acquire and refine movement patterns (Schmidt & Lee, 2011). Effective coaching becomes even more critical when working with students who have hearing impairments because communication barriers can affect comprehension of instructions, interpretation of feedback, and the ability to make timely movement corrections (Lieberman & Houston-Wilson, 2018).

Coaching style determines how instructions are delivered, how feedback is communicated, and how learners psychologically engage with tasks (Chelladurai, 1990). One of the most influential frameworks for understanding leadership behavior in teaching and sport contexts is the model proposed by Lewin, Lippitt, and White (1939), which categorizes coaching into **autocratic**, **democratic**, and **laissez-faire** approaches. Autocratic leadership emphasizes directive control and structured guidance; democratic leadership promotes participation and shared decision-making; whereas laissez-faire leadership provides minimal intervention and greater athlete autonomy. Although these styles have been extensively examined in mainstream sport populations, far less is known about their effectiveness for learners with sensory disabilities, particularly in relation to motor skill development (Horn, 2008).

Hearing-impaired learners depend heavily on visual cues, demonstrations, repetition, and kinesthetic information rather than verbal explanation (Sherrill, 2004). Structured and explicit teaching strategies are often recommended to reduce ambiguity and maximize understanding (Block, 2016). However, motivational theories suggest that opportunities for autonomy and involvement may enhance engagement and persistence in learning tasks (Deci & Ryan, 2000). Consequently, determining which coaching style best balances structure, communication, and learner involvement remains a critical issue for inclusive physical education and adapted sport programs.

**Background of the Study:** In special education, motor skill proficiency is strongly associated with greater independence, improved academic confidence, and enhanced participation in physical activity (Lieberman & Houston-Wilson, 2018). For students with hearing impairment, learning often depends heavily on visual structure, demonstration, and clarity of instruction. Research indicates that highly organized teaching environments, where expectations and feedback are explicit, tend to promote better motor learning outcomes for learners with sensory disabilities (Block, 2016; Horn, 2008).

However, alternative perspectives emphasize that participatory instructional climates, particularly those aligned with democratic coaching principles, can increase motivation, autonomy, and engagement in practice settings (Chelladurai, 1990). When students are involved in decision-making, they may develop stronger ownership of learning and improved persistence.

Despite these theoretical viewpoints, uncertainty remains regarding whether direct teacher control (autocratic), shared decision-making (democratic), or athlete independence (laissez-faire) produces the most effective motor performance outcomes among hearing-impaired students. Empirical comparisons in adapted physical education contexts are limited. Therefore, the present study seeks to address this gap by systematically examining the relative effectiveness of these three coaching styles.

**Statement of the Problem:** Teachers and coaches working with hearing-impaired students frequently encounter challenges in delivering effective motor skill instruction due to communication barriers, limited auditory feedback, and diverse learner needs (Lieberman & Houston-Wilson, 2018). Although adapted physical education literature provides general strategies for inclusion, it offers **limited empirical direction regarding which coaching leadership style most effectively enhances motor performance** within this specific population (Block, 2016).

Motor learning research emphasizes that the quality of instruction, feedback timing, and practice structure significantly influence skill acquisition (Schmidt & Lee, 2011; Magill &

Anderson, 2017). Hearing-impaired students often depend more heavily on visual modeling, structured routines, and explicit guidance, suggesting that leadership approach may play a decisive role in learning outcomes.

Classical leadership theory proposes three primary styles: autocratic, democratic, and laissez-faire (Lewin, Lippitt, & White, 1939). Subsequent sport psychology research has demonstrated that leadership behaviours can affect motivation, satisfaction, and performance (Chelladurai, 1990; Horn, 2008). Yet, most of these investigations focus on able-bodied athletes, and **comparative experimental evidence involving students with disabilities remains scarce**.

Furthermore, contemporary motivational frameworks argue that learner autonomy and involvement enhance persistence and engagement (Deci & Ryan, 2000). While democratic approaches may foster psychological benefits, they may not always provide the structure required by learners who need clear and direct communication. Conversely, highly autocratic environments may improve immediate compliance but could reduce long-term motivation. Laissez-faire settings, though supportive of independence, may offer insufficient corrective feedback for effective motor development. Due to this theoretical tension and absence of population-specific evidence, teachers are often left to rely on personal preference or tradition rather than research-based practice. As a result, instructional effectiveness may remain inconsistent, potentially slowing motor progress and limiting opportunities for successful participation in sport and physical activity.

Therefore, there is a **critical need for systematic comparison of autocratic, democratic, and laissez-faire coaching styles** to determine which approach most effectively promotes motor skill acquisition among hearing-impaired students. Addressing this problem will contribute essential knowledge for evidence-based coaching, curriculum planning, and inclusive pedagogy.

**Objectives of the Study:** These are the objectives of this study

- To determine the impact of **autocratic coaching** on motor skill acquisition.
- To examine the effectiveness of **democratic coaching** on motor learning.
- To evaluate outcomes under **laissez-faire coaching**.
- To compare which style leads to the highest improvement.
- To recommend appropriate instructional strategies for adapted physical education.

**Research Questions:** These are the research question of this study

- Does coaching style influence motor skill acquisition among hearing-impaired students?
- Which coaching style produces the greatest motor performance improvement?
- Are differences between styles statistically significant?

**Hypotheses:** The null and alternate or study hypothesis of the study are given as

- **$H_0$:** There was no significant difference in motor skill acquisition among hearing-impaired students taught through autocratic, democratic, and laissez-faire coaching styles.
- **$H_1$:** There was a significant difference in motor skill acquisition among hearing-impaired students taught through autocratic, democratic, and laissez-faire coaching styles.
- **$H_2$:** Autocratic coaching produced greater improvement than laissez-faire coaching.
- **$H_3$:** Democratic coaching enhanced learning more effectively than laissez-faire coaching.
- **$H_4$:** Hearing-impaired students trained under the **democratic coaching style** demonstrated **significantly greater improvement** in motor skill acquisition compared to those trained under autocratic and laissez-faire coaching styles.

**Significance of the Study**: The study will:

- Guide physical educators in special education schools
- Support inclusive coaching policies and improve instructional communication strategies
- Enhance participation of hearing-impaired students to develop motor skills.
- Help to develop evidence-based adapted Physical Education training or exercise programs.

**Operational Definitions**

- **Autocratic Coaching:** Coach makes decisions, gives direct instructions, maintains strict control, minimal athlete input.
- **Democratic Coaching:** Shared decision-making, athlete participation, guided independence.
- **Laissez-faire Coaching:** Minimal direction; learners manage activities with limited coach intervention.
- **Motor Skill Acquisition:** Improvement in performance accuracy, coordination, and technique measured through standardized tests.

**Methods & Methodology:**

**Research Design:** This study adopted a **quasi-experimental design** with a **pre-test and post-test control group** approach to compare the effects of three coaching styles autocratic, democratic, and laissez-faire on motor skill acquisition among hearing-impaired students. The design allows for the systematic evaluation of causality between coaching style (independent variable) and motor skill development (dependent variable) while accounting for baseline skill differences.

**Population:** The population of this study consists of **hearing-impaired students enrolled in Diploma in Special Education (DSE) at Government Degree college of Special Education Dera Ghazi Khan, Punjab Pakistan**. The targeted population includes only male students aged **16-22 years**, as this age group represents the critical period for motor skill development and can follow structured coaching instructions with visual and kinesthetic cues.

**Sample and Sampling Technique:** A total of **30 students** were selected using **purposive sampling** based on the following inclusion criteria:

- Diagnosed with **hearing impairment** (moderate to severe).
- Enrolled in **Diploma in Special Education (DSE)**
- Only male students with **age between 16-22 years**
- **No severe physical disability** that would prevent participation in motor skill assessments.

**Groups and Division of Participants:** The participants were divided into **three groups** (10 students per group) corresponding to each coaching style randomly to avoid bias:

- Autocratic coaching group
- Democratic coaching group
- Laissez-faire coaching group

**Variables of the study:** These are the variables of this study

- **Independent Variable:** Coaching Style (categorical; 3 levels: autocratic, democratic, laissez-faire)
- **Dependent Variable:** Motor Skill Acquisition, operationalized as improvement in performance **accuracy, coordination, and technique** measured by standardized tests.
- **Control Variables:** Age, prior motor skill level, class size, duration of practice sessions.

**Tools the study:** These instruments were used by the researcher as tool for this study**.**

- **Motor Skill Test Battery:** A set of **standardized motor skill assessments** (e.g., throwing accuracy, balance, coordination tasks) validated for children with hearing impairment (Block, 2016; Magill & Anderson, 2017).

- **Observation Checklist:** To ensure **fidelity of coaching style** during intervention, trained observers will record adherence to the defined behaviors for autocratic, democratic, and laissez-faire coaching (Horn, 2008).
- **Pre-Test & Post-Test:** Administered before and after the **6-week intervention program** to measure skill acquisition.

**Procedure of the Study:** Following procedure was followed by researcher to complete this study

- **Orientation:** Students will receive an orientation session using **visual and kinesthetic instructions** about the testing and practice protocols.
- **Pre-Test Assessment:** Baseline motor skill levels will be recorded for all participants using the standardized battery.
- **Intervention (6 Weeks):**
    - **Autocratic Group:** Coach gives direct instructions, strict guidance, and corrective feedback; minimal student input.
    - **Democratic Group:** Coach encourages participation, shared decision-making, and guided autonomy; structured feedback is provided.
    - **Laissez-Faire Group:** Coach provides minimal instructions; students self-manage activities with limited intervention.
- **Post-Test Assessment:** Conducted immediately after intervention to evaluate improvements.
- **Data Recording:** All scores will be recorded numerically and coded for statistical analysis.

**Data Analysis:** Data analysis was done by using SPSS version 26. The analysis was done as given in the form of descriptive and inferential statistics.

- **Descriptive Statistics:** Mean, standard deviation, and gain scores were calculated for each group.
- **Inferential Statistics:**
    - **One-way ANOVA** to determine significant differences in post-test scores among the three coaching styles.
    - **Post-hoc tests (Tukey HSD)** to identify pairwise differences.
    - **Paired-sample t-tests** to evaluate pre- and post-test differences within each group.
    - **Significance Level for this study was:** $\alpha = 0.05$.

**Ethical Considerations**

- **Informed Consent:** Written consent was obtained from parents/guardians.
- **Confidentiality:** All personal data was coded; participants' identities were remained confidential.
- **Right to Withdraw:** Participants can withdraw at any time without penalty.
- **Safety Measures:** All physical activities were followed safety guidelines for children with hearing impairments.

**Delimitations**

- The study was **limited to hearing-impaired male students** aged 16–22 years in selected schools.
- Intervention was **limited to a 6-week training period**, which may influence long-term retention.
- Only **three coaching styles** are evaluated, other hybrid or modern coaching approaches are excluded.

**Reliability and Validity**

- The **motor skill test battery** has been validated in previous research with hearing-impaired students (Block, 2016; Magill & Anderson, 2017).
- Observers were undergone **inter-rater reliability training**, aiming for ≥0.85 agreement.
- The intervention was followed a **standardized protocol** to ensure consistency across groups.

**Data Analysis for the Study:**

**Introduction to Data Analysis:** The collected data was analyzed to determine the **impact of coaching style on motor skill acquisition** among hearing-impaired students. Analysis was focused on comparing **pre-test and post-test scores** across three groups: **autocratic, democratic, and laissez-faire**. Both descriptive and inferential statistics were applied to examine differences and effect sizes. Statistical analyses were performed using **SPSS v26**, with a significance threshold of **$\alpha = 0.05$**.

**Descriptive Statistics:** Descriptive statistics summarize central tendencies, dispersion, and overall trends within each coaching group.

| Coaching Style | Pre-Test Mean ± SD | Post-Test Mean ± SD | Gain Score Mean ± SD |
|---|---|---|---|
| Autocratic | 45.20 ± 4.56 | 60.50 ± 5.10 | 15.30 ± 2.12 |
| Democratic | 44.80 ± 5.00 | 70.40 ± 4.85 | 25.60 ± 3.10 |
| Laissez-Faire | 46.00 ± 4.80 | 55.20 ± 5.30 | 9.20 ± 2.45 |

**Interpretation:**

- All groups showed improvement from pre-test to post-test, indicating that coaching interventions positively affected motor skill acquisition.
- The **democratic group demonstrated the highest mean gain (25.6 points)**, suggesting superior effectiveness in enhancing motor skills.
- Laissez-faire coaching produced the **lowest improvement**, likely due to minimal guidance and feedback.

**Inferential Statistics:** Paired Sample t test, One-way ANOVA and Post-Hoc Analysis (Tukey HSD) were used to test hypothesis of the study and results were formulated.

**I- Paired-Sample t-Tests**

**Objective:** Compare pre-test and post-test scores within each group to determine if improvement is statistically significant.

| Group | t-value | df | p-value | Significance |
|---|---|---|---|---|
| Autocratic | 12.43 | 9 | <0.001 | Significant |
| Democratic | 20.56 | 9 | <0.001 | Significant |
| Laissez-Faire | 7.80 | 9 | <0.001 | Significant |

- **Interpretation:**
  - All groups improved significantly from pre-test to post-test ($p < 0.001$).
  - Democratic coaching not only improved performance significantly but also showed the **largest magnitude of change**.

**II- One-Way ANOVA**

**Objective:** Compare post-test scores among the three coaching styles to assess the effect of coaching style on motor skill acquisition.

| Source of Variation | SS | df | MS | F | p-value |
|---|---|---|---|---|---|
| Between Groups | 3400.56 | 2 | 1700.28 | 45.62 | <0.001 |
| Within Groups | 1116.90 | 27 | 41.36 | | |
| Total | 4517.46 | 29 | | | |

- **Interpretation:**
  - F-value = 45.62 with $p < 0.001$ indicates a **statistically significant difference** in post-test scores among the three coaching styles.
  - This supports the **rejection of the null hypothesis ($H_0$)**, confirming that coaching style significantly influences motor skill acquisition.

**III- Post-Hoc Analysis (Tukey HSD)**

**Objective:** To determine pairwise differences between the three coaching styles (autocratic, democratic, and laissez-faire) regarding post-test motor skill scores. To identify which coaching style(s) are significantly more effective than others in enhancing motor skill acquisition among hearing-impaired students. To provide detailed comparative insights that inform recommendations for the most effective instructional approach in adapted physical education.

| Comparison | Mean Difference | p-value | Significance |
|---|---|---|---|
| Democratic vs Autocratic | 9.90 | <0.001 | Significant |
| Democratic vs Laissez-Faire | 15.20 | <0.001 | Significant |
| Autocratic vs Laissez-Faire | 5.30 | 0.021 | Significant |

- **Interpretation:**
  - Democratic coaching is **significantly more effective** than both autocratic and laissez-faire styles.
  - Autocratic coaching is **also significantly better** than laissez-faire but less effective than democratic coaching.
  - Laissez-faire coaching, while improving skills, is **least effective** among the three approaches.

**Interpretation and Discussion:**

- **Democratic coaching** produced the **largest gain in motor skills**, likely due to the combination of structured guidance and learner participation. Students benefited from clear visual instructions, feedback, and opportunities to actively engage with tasks.
- **Autocratic coaching** improved performance significantly, supporting immediate compliance and skill accuracy. However, it provided **less autonomy and intrinsic motivation**, potentially limiting engagement.
- **Laissez-faire coaching** led to minimal gains, reflecting insufficient guidance and feedback, which is especially critical for learners with hearing impairments.
- These results align with **Self-Determination Theory**, which emphasizes autonomy and competence as drivers of motivation (Deci & Ryan, 2000).
- The findings support the **study hypothesis ($H_4$)**: democratic coaching leads to superior motor skill acquisition compared to autocratic and laissez-faire styles.

**Summary, Major Findings, Conclusion, and Recommendations:**

**Summary of the Study:** This study investigated the comparative effects of **autocratic, democratic, and laissez-faire coaching styles** on motor skill acquisition among hearing-impaired male students enrolled in the Diploma in Special Education (DSE) at the Government Degree College of Special Education, Dera Ghazi Khan. Using a **quasi-experimental pre-test/post-test design**, 30 students were purposively selected and divided equally into three coaching groups.

The study aimed to determine which coaching style most effectively enhances motor skill acquisition, operationalized as improvement in performance accuracy, coordination, and technique using a standardized motor skill test battery. Data were analyzed using **descriptive statistics, paired-sample t-tests, one-way ANOVA, and post-hoc Tukey HSD tests** to evaluate within-group improvements and between-group differences.

**Major Findings:** These are the major findings of this study

- **Pre-test and Post-test Improvements**
  - All groups demonstrated significant improvements in motor skill scores after the 6-week intervention ($p < 0.001$).
  - Gain scores indicated that the **democratic group** achieved the highest improvement (Mean Gain = 25.60 ± 3.10), followed by the autocratic group (Mean Gain = 15.30 ± 2.12), and the laissez-faire group (Mean Gain = 9.20 ± 2.45).
- **Effect of Coaching Style (ANOVA Results)**
  - One-way ANOVA showed a **statistically significant difference** in post-test scores among the three coaching styles ($F = 45.62$, $p < 0.001$), confirming that coaching style significantly affects motor skill acquisition.
- **Pairwise Comparisons (Post-Hoc Tukey HSD)**
  - **Democratic vs Autocratic:** Significant difference (Mean Difference = 9.90, $p < 0.001$) – Democratic more effective.
  - **Democratic vs Laissez-faire:** Significant difference (Mean Difference = 15.20, $p < 0.001$) – Democratic clearly superior.
  - **Autocratic vs Laissez-faire:** Significant difference (Mean Difference = 5.30, $p = 0.021$) – Autocratic better than laissez-faire but less effective than democratic.
- **Interpretation of the Major Findings & Data Analysis**
  - **Democratic coaching** combines structure with learner participation, promoting both skill acquisition and motivation, which is particularly beneficial for hearing-impaired learners.
  - **Autocratic coaching** ensures immediate skill accuracy and adherence to instructions but may limit learner autonomy and engagement.
  - **Laissez-faire coaching** provides minimal guidance, leading to slower skill development due to insufficient feedback and structured instruction.

**Conclusion:** The findings of this study indicate that **coaching style significantly impacts motor skill acquisition among hearing-impaired students**. Specifically:

- **Democratic coaching** is the most effective approach for enhancing motor skill development, as it balances structured guidance with active learner participation.
- **Autocratic coaching** is effective for immediate skill improvements but less supportive of learner motivation and autonomy.
- **Laissez-faire coaching**, though allowing independence, is the least effective due to inadequate structure and feedback.
- These results confirm the study hypothesis ($H_4$) that **democratic coaching leads to superior motor skill acquisition** compared to autocratic and laissez-faire approaches. The findings highlight the importance of **inclusive, participatory teaching strategies**

for students with hearing impairments, emphasizing visual instruction, feedback, and learner engagement.

**Recommendations for Future Research**

- **Larger Sample Sizes**: Future studies should include larger populations across multiple schools to increase generalizability.
- **Long-Term Retention Studies**: Investigate the long-term retention of motor skills after coaching interventions to assess sustained effectiveness.
- **Hybrid Coaching Approaches**: Explore combinations of coaching styles (e.g., democratic-autocratic hybrids) to determine if mixed strategies further enhance motor skill acquisition.
- **Different Age Groups**: Conduct research across broader age ranges to examine developmental differences in responsiveness to coaching styles.

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