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CIRCUIT TRAINING IMPLEMENTATION IN INDONESIAN ARMY PHYSICAL EDUCATION A QUALITATIVE CASE STUDY

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Abstrak

Penelitian ini mengkaji pelaksanaan pembinaan kesegaran jasmani dan latihan sirkuit di Dinas Jasmani Angkatan Darat, Cimahi, Jawa Barat. Penelitian menggunakan pendekatan kualitatif deskriptif dengan desain studi kasus dan melibatkan 44 informan yang dipilih secara purposif, terdiri atas satu pimpinan institusi, lima kepala seksi, 35 prajurit, dan tiga pakar atau atlet olahraga. Data dikumpulkan melalui observasi, wawancara terstruktur, dan analisis dokumen, kemudian dianalisis melalui reduksi data, penyajian data, serta penarikan dan verifikasi kesimpulan. Triangulasi digunakan untuk memeriksa kredibilitas temuan. Hasil menunjukkan bahwa program telah memiliki jadwal dan standar penilaian, tetapi pelaksanaannya menghadapi rutinitas latihan berulang, keterbatasan penyesuaian beban individu, dan gangguan partisipasi akibat tuntutan tugas. Informan mengaitkan latihan sirkuit dengan variasi aktivitas dan keterlibatan kelompok. Temuan tersebut merupakan persepsi informan, bukan bukti peningkatan fisiologis. Kontribusi penelitian terletak pada penjelasan kontekstual mengenai kesenjangan antara pengaturan program dan pelaksanaan latihan yang adaptif. Pengembangan modul, pemantauan beban, dan penguatan kompetensi pelatih direkomendasikan untuk diuji lebih lanjut.

Kata kunci: Latihan Sirkuit; Pendidikan Jasmani Militer; Implementasi Pelatihan; Individualisasi Beban Latihan; TNI Angkatan Darat

Abstract

Keywords: Qur'an memorization; boarding program; full-day program; tahfidz implementation; learning supervision; school–family partnership.This study examines physical fitness development and circuit training implementation at the Army Physical Training Service in Cimahi, West Java. A descriptive qualitative case study involved 44 purposively selected informants: one institutional leader, five section heads, 35 soldiers, and three sports experts or athletes. Data were collected through observation, structured interviews, and document analysis and analyzed through data reduction, data display, and conclusion drawing and verification. Triangulation supported credibility. The findings identify an established system of training schedules and assessment

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standards alongside repetitive routines, limited workload individualization, and participation disrupted by operational duties. Informants associated circuit training with exercise variety and group engagement; these accounts indicate perceived benefits rather than measured physiological improvement. Instructor competence, equipment availability, and supervision were identified as relevant implementation conditions. The study offers a contextual account of the gap between formal program organization and adaptive delivery in military physical education. Adaptable training modules, workload monitoring, and instructor development are proposed for subsequent evaluation. The single institutional case does not establish effectiveness or prevalence across the Indonesian Army.

Keywords: Circuit Training; Military Physical Education; Training Implementation; Workload Individualization; Indonesian Army

PENDAHULUAN

Physical readiness is a core requirement for Indonesian Army personnel because military duties demand endurance, strength, mobility, and the ability to sustain performance under changing operational conditions. Physical fitness development is therefore part of professional readiness rather than merely a routine sporting activity. The Army Physical Training Service has an institutional role in organizing, supervising, and evaluating soldiers' physical development through structured programs and periodic assessment. The central issue is that a formal training structure does not automatically produce uniform outcomes. Soldiers differ in age, body composition, health status, training history, and functional demands, while the same routine may produce different physical responses. Indonesian research has also shown that structured physical exercise needs to be aligned with participant condition and training objectives if improvement is expected to occur consistently (Mutaqin, 2018). This tension between standardized military requirements and individual physical differences provides the starting point for examining how physical training can be organized more adaptively (Ananta & Adi, 2019).

Physical training increasingly emphasizes measurable workload, progression, recovery, and individual adjustment rather than the mere completion of scheduled exercise. This development reflects a shift from uniform routines toward training that responds to participant capability and functional demand. In a military setting, such adjustment is important because personnel may follow the same institutional program while entering training with different levels of readiness. A progressive program must therefore connect exercise intensity, frequency, duration, and recovery with participant capacity. Research on the application of training principles in Indonesia has shown that physical development may remain suboptimal when progression, recovery, and individual differences are not managed consistently (Aprilia et al., 2018). The same concern applies to military physical education, where training continuity must coexist with operational duties and varying physical conditions. This creates a need for exercise

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formats that remain structured at the institutional level but flexible enough to accommodate differences in physical readiness.

The specific problem examined in this study appears within the physical fitness development program of the Army Physical Training Service. The program already covers posture development, cardiovascular endurance, muscular strength and endurance, flexibility, military agility, and periodic assessment. Internal records reviewed in this study nevertheless identified 11 personnel in the 2023 periodic assessment whose results required further attention. Three personnel obtained fitness scores below the institutional minimum of 51, while nine were classified within the Upper Limit or Outside Upper Limit body-posture categories. The available record does not establish whether these two groups overlapped. Interviews and observations also identified repetitive exercise patterns, aerobic intensity that was not always measured consistently, limited adjustment of workload to individual capacity, and participation that could be disrupted by operational schedules. These findings do not indicate the absence of physical development activities, but reveal an implementation gap between established programs and consistently adaptive training practice.

The consequences of uneven implementation extend beyond periodic fitness scores because military readiness depends on the ability to perform physical tasks safely and consistently under different operational demands. Soldiers with unequal baseline fitness, body composition, or training experience may not receive an equivalent stimulus from the same workload. When intensity is insufficiently measured, exercise becomes repetitive, or participation is inconsistent, instructors have less information for deciding whether the program remains appropriate for each participant. The problem is therefore not simply whether soldiers complete training, but whether the training process maintains an appropriate relationship between physical demand, adaptation, and recovery. Indonesian research on conditioning has indicated that incomplete application of training principles can restrict physical development even when a structured program is already available (Aprilia et al., 2018). For a military institution, this issue is important because physical development must accommodate individual readiness while continuing to support collective standards and unit-level operational requirements.

Circuit training offers a practical alternative because it organizes several exercises into sequential stations and allows multiple fitness components to be trained within one session. The method can combine cardiovascular work, muscular endurance, strength, agility, and mobility while using bodyweight exercises, portable equipment, or available indoor and outdoor facilities. Its station-based structure is relevant when training time is limited and exercise variation is needed to reduce monotony. Indonesian evidence shows that circuit-based exercise can improve fitness, body composition, and flexibility when implemented through a structured program (Dwicahya & Arjuna, 2019). Even so, circuit

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training should not be treated as a universal substitute for other forms of military physical preparation. Its practical value depends on exercise selection, workload, station sequence, recovery intervals, movement technique, and alignment with functional demands. The method is therefore more appropriately positioned as an adaptable component within a broader physical development system rather than as a fixed formula applied identically to all soldiers.

Indonesian studies indicate that the effects of circuit training are not uniform across populations and training conditions. Reported outcomes vary according to participant characteristics, baseline fitness, exercise intensity, program duration, and the indicators selected for assessment. Comparative research involving basketball players found no significant difference between circuit and interval training in improving VO_2max, while leg-muscle endurance influenced participants' responses to the two methods (Prakoso & Sugiyanto, 2017). This finding is important because it limits the assumption that circuit training will automatically produce superior results simply because it combines several exercises in one session. The method must be evaluated together with the dosage and context in which it is applied. Existing evidence therefore supports circuit training as a potentially useful format, but its effectiveness remains conditional rather than universal. This position is particularly relevant when the method is transferred from educational or sport settings into a military institution with different functional demands and organizational constraints.

The literature also reveals a contextual gap. Indonesian studies on circuit training have predominantly examined students, athletes, and general fitness participants, usually emphasizing changes in measurable physical outcomes. Less attention has been given to circuit training as an institutionally managed component of military physical education. This distinction matters because military implementation involves more than exercise selection. Instructor competence, workload individualization, equipment availability, safety procedures, participant motivation, operational schedules, and organizational support may affect how the method is delivered. Research on coach competence in Indonesia has shown that technical knowledge, communication, and the ability to manage training influence the quality of program implementation (Rohman, 2017: Chaidir, 2026). The unresolved question is therefore not merely whether circuit training can improve physical fitness, but how institutional and instructional conditions shape its application among soldiers with different readiness levels and occupational demands. This gap provides the central justification for the present study within the Indonesian Army setting.

Training effectiveness and physical adaptation principles provide the main analytical perspective for examining this problem. Effective physical development requires alignment between objectives, program design, implementation, supervision, and evaluation. Within this process, overload provides sufficient stimulus, progression

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regulates increasing demand, individualization adjusts workload to participant characteristics, specificity connects exercise with functional needs, and recovery supports adaptation between sessions. These principles are especially relevant when the same institutional program is delivered to personnel with different physical capacities. Indonesian research has shown that incomplete application of training principles can reduce the quality of physical development despite the existence of a structured program (Aprilia et al., 2018). In this study, these principles are linked with institutional factors such as instructor capability, facilities, safety management, participant motivation, and monitoring. Circuit training is therefore examined not merely as a sequence of exercise stations, but as a managed process shaped by the interaction between physiological principles, instructional decisions, participant characteristics, and organizational support.

The focus of this study is to shift the analytical focus from circuit training as an isolated exercise technique to circuit training as an adaptive and institutionally managed component of military physical education. Previous Indonesian research has largely assessed physical outcomes after circuit-based interventions among school, sport, or general fitness populations (Afdinda et al., 2021). The present study instead examines how the method is organized, adjusted, supervised, and evaluated within the Army Physical Training Service. This perspective connects sport-science principles with organizational practice by placing instructor competence, individual workload, facilities, safety, motivation, program consistency, and evaluation within a contextual analysis of implementation. The contribution is not to propose circuit training as a new exercise method, but to explain the conditions under which an established method can be applied more appropriately in a military setting (Lubis et al., 2026). Practically, the findings are expected to inform the subsequent development of standardized yet adaptable training modules that remains responsive to differences in soldier readiness and functional requirements.

This study addresses two research questions: (1) How is physical fitness development organized and implemented at the Army Physical Training Service in Cimahi? (2) What institutional and instructional conditions shape circuit training implementation and its adaptation to soldiers' differing capacities? Training principles inform the examination of exercise design, while instructor decisions, facilities, operational schedules, and supervision provide the organizational context. This analytical distinction guides the interpretation of implementation conditions without treating physiological principles as a complete organizational theory. The study does not test physiological effectiveness or validate an optimization model.

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METODE PENELITIAN

This descriptive qualitative case study examined circuit training within the physical fitness development program at the Army Physical Training Service in Cimahi, West Java. The bounded case was the institutional training program, rather than the Indonesian Army as a whole. A case study design supported examination of training practices in their organizational setting (Yin, 2018). The study involved 44 purposively selected informants: one institutional leader, five section heads, 35 soldiers, and three sports experts or athletes. Selection was based on knowledge, experience, and involvement in physical fitness development and circuit training. This composition provided access to organizational, participant, and specialist perspectives; it did not constitute a statistically representative sample (Campbell et al., 2020). Data sources comprised direct observation, structured interviews, and documents concerning training programs, institutional guidelines, fitness records, facilities, and circuit-based activities. The documentary material included a 2023 periodic assessment covering 11 personnel requiring further attention. This documentary subset is analytically distinct from the 35 soldier informants: the available reporting does not establish whether individuals belonged to both groups. The record was used for institutional context rather than to estimate prevalence.

Data processing involved examining completeness and relevance, classifying material by research question, and comparing interview, observational, and documentary evidence. Analysis followed data reduction, data display, and conclusion drawing and verification (Miles et al., 2014). Attention centered on program organization, exercise variation, workload adjustment, instructor competence, facilities, participation, safety, and perceived benefits. These domains organize the reported findings; they should not be read as a reconstructed coding audit trail. Credibility procedures reported in the source manuscript included repeated examination of material, confirmation with relevant sources, and triangulation across times and types of evidence. Triangulation served as a credibility procedure rather than a separate substantive analysis (Nowell et al., 2017). Interpretation distinguishes reported practices, participant perceptions, and proposed improvements. No SWOT matrix is presented because its derivation and empirical product could not be established from the supplied material.

HASIL DAN DISKUSI

Results

Program organization and documentary findings

Physical fitness development at the Army Physical Training Service was organized through programs covering body posture, general physical fitness, military agility, and sports activities. The programs were incorporated into annual, quarterly, monthly, weekly, and daily training schedules under the supervision of the relevant institutional units.

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Physical fitness activities included cardiovascular endurance exercises, muscular strength and endurance training, speed and agility drills, flexibility exercises, and selected military movement skills. The institutional assessment used a minimum physical fitness score of 51 and a normal body-posture classification as basic indicators of achievement. Unit commanders, physical training officers, instructors, and soldiers held interconnected roles in planning, implementing, supervising, and evaluating the program. This structure shows that physical fitness development was treated as an institutional process intended to maintain soldiers' functional readiness rather than as an occasional sporting activity.

Documentary evidence revealed that the established training structure had not produced uniform outcomes among the personnel included in the 2023 periodic physical fitness assessment. The reviewed record covered 11 personnel whose results indicated conditions requiring further attention. Nine personnel were classified in the Upper Limit or Outside Upper Limit body-posture categories, while three personnel obtained physical fitness scores below the prescribed minimum of 51. The source document does not specify whether the personnel recorded in the two categories were different individuals or whether some experienced both conditions. Interview and observational findings also identified repetitive exercise content, inconsistently measured aerobic intensity, limited workload adjustment, and irregular individual participation. Table 1 presents the principal quantitative and qualitative findings used to describe the current condition of physical fitness development. These counts are not institutional prevalence estimates, and the two classifications must not be summed as separate individuals.

Table 1. Conditions identified in the supplied institutional material

Domain	Reported finding	Source
Periodic assessment	11 personnel in the reviewed 2023 record	Institutional document
Fitness score	3 personnel below 51	Periodic assessment
Posture classification	9 personnel classified as LA/LLA; overlap with low scores unspecified	Posture assessment
Exercise intensity and variation	Inconsistent intensity measurement and repetitive routines	Interviews and observation
Participation	Disruption associated with operational duties and individual motivation	Interviews and observation

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Source: 2023 assessment and interview and observational findings described in the supplied manuscript. The relationship between documentary and interview samples remains unconfirmed.

Perceived benefits and implementation conditions

Circuit training had been incorporated into physical development activities at the Army Physical Training Service as an alternative to repetitive exercise routines. The method consisted of sequential exercise stations targeting muscular strength, endurance, speed, agility, flexibility, and cardiovascular capacity. Instructors adjusted the number of stations, exercise selection, equipment, and training location according to available facilities and participant conditions. The use of simple or portable equipment allowed training to be conducted in indoor and outdoor areas, which offered practical flexibility when dedicated facilities were limited. Informants perceived the method as capable of engaging several physical components within a relatively short training session. Their statements also associated circuit training with improved stamina, muscular endurance, movement readiness, and mental persistence. These accounts represent participant and instructor perceptions rather than physiological proof because the study did not collect pre-intervention and post-intervention measurements.

Participant responses indicated that exercise variation influenced motivation and engagement during the training process. A senior instructor described soldiers as more responsive when each station presented a different physical challenge than when one movement pattern was repeated throughout the session. Group-based implementation created opportunities for soldiers to observe their colleagues, provide encouragement, and complete the exercise sequence collectively. Several informants associated this setting with reduced boredom, stronger participation, and a healthier form of competition. The social interaction within each session did not reduce the physical demands of the program but appeared to influence how the workload was perceived and sustained. Instructor communication also affected participant confidence because clear demonstrations, workload adjustments, and orderly transitions helped soldiers understand the expected movement and complete each station more safely. Training engagement can therefore be understood as part of program quality rather than as an outcome separated from technical exercise design.

The interview findings showed that circuit training was perceived as a practical method for developing several physical components within a single exercise session. Informants associated the method with muscular strength, endurance, agility, cardiovascular capacity, and greater variation in routine training. Their assessments also indicated that circuit training could not replace every form of physical preparation required by Indonesian Army personnel. Certain military duties demand specific movement patterns, sustained endurance, tactical coordination, and physical responses

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that may not be developed adequately through a general circuit alone. One informant emphasized the need to combine circuit training with exercises that correspond to the occupational demands faced by each unit. Another informant highlighted the importance of adjusting exercise intensity because soldiers enter the program with different levels of fitness, health status, and training experience. These findings position circuit training as one component of a broader physical development system rather than a complete training method applied uniformly to all personnel.

Informants described equipment availability as uneven relative to group size and identified bodyweight exercises and portable equipment as practical options. They also emphasized exercise demonstrations, workload adjustment, equipment checks, and supervision. These accounts identify implementation concerns; they do not establish that a particular dose, station sequence, or safety procedure produced a measured outcome. Direct quotations and subgroup comparisons cannot be supplied from the material provided. The former numerical training table has been removed because the supplied manuscript does not identify traceable primary documents establishing whether its ranges described observed practice or a proposed prescription. The reported findings therefore do not establish a validated circuit-training dose or a tested operational model.

Discussion

Table 1 shows that the limitations of the physical fitness development program concerned both the assessment outcomes and the organization of routine training. The presence of personnel below the minimum fitness score and within the LA/LLA posture classifications indicates that the formal standards had not been achieved consistently. The findings cannot be interpreted as evidence that a single training practice directly caused a particular physical result because the study did not use an experimental design. The documentary data need to be read together with interview and observational evidence concerning exercise intensity, training variation, participation, and supervision. Initial fitness level may also influence the extent to which individuals respond to a standardized program. Research involving military trainees found that participants with different baseline fitness levels did not experience an equal probability or magnitude of improvement after following the same physical training program (Pierce et al., 2025).

The combined findings indicate that physical fitness development at the Army Physical Training Service had an established institutional foundation but remained uneven in its operational implementation. Circuit training provided exercise variety and a structure capable of addressing several fitness components within one session. Its contribution depended on the interaction between instructor competence, individual workload adjustment, program consistency, facilities, exercise technique, participant motivation, and continuous evaluation. The introduction of a new military fitness

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program may alter training behavior and injury patterns, making periodization, technical supervision, recovery, and individualization essential components of implementation (Pearson et al., 2025). Research on military injury prevention also emphasizes progressive workload management, neuromuscular and resistance training, leadership awareness, and collaboration among commanders, instructors, health professionals, and researchers (Dijksma et al., 2020). The current program can therefore be understood as a developing physical education system whose effectiveness is shaped by the relationship between institutional policy, coaching practices, individual readiness, and organizational support.

The case suggests a tension between formal scheduling and adaptive delivery. Operational interruptions were reported alongside limited workload adjustment, while equipment availability and instructor capability affected how stations could be organized. These findings support examining program organization and instructional decisions together. They do not demonstrate a causal mechanism or establish agreement across all participant groups. The educational implication concerns how instructors explain movements, observe performance, and adjust tasks within institutional constraints.

Instructor competence emerged as a central condition in translating circuit training into safe and meaningful practice. Several trainers had attended workshops and possessed an adequate theoretical understanding of circuit training. Field implementation still revealed limitations in exercise variation, individual workload adjustment, and the ability to modify stations according to different levels of readiness. Informants identified continuous professional development, knowledge sharing, supervision, and periodic evaluation as necessary for maintaining training quality. Instructor competence in this setting involves more than demonstrating movements because trainers must interpret participant condition, determine the appropriate workload, identify technical errors, and decide whether a soldier can continue, modify, or stop an exercise. The supervision literature offers a relevant comparison, although evidence from sport cannot establish the effects of instructor supervision in this military case (Valentin et al., 2024). The role of the instructor should therefore extend from delivering commands to managing an adaptive learning process in which physical effort, movement quality, and safety are observed simultaneously.

Training facilities influenced the range and continuity of exercises that could be incorporated into each circuit. Informants reported the availability of dumbbells, kettlebells, mats, cardiovascular equipment, functional training devices, and open areas that could support indoor and outdoor sessions. Other accounts indicated that the number of tools was not always sufficient when several participants trained at the same time. Limited equipment could interrupt movement between stations, create waiting periods, and alter the work-to-rest ratio planned by the instructor. The use of bodyweight exercises and portable equipment offered a practical response to this limitation, although the

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selected movements still required alignment with the intended fitness component. Informants also proposed the use of fitness applications to record training time, intensity, and individual progress. Military workload research recognizes heart rate, accelerometry, and related measures as useful tools for estimating internal and external training demands, while also noting that each measure has practical and interpretive limitations (Michael et al., 2022). Technology should therefore support instructor judgment rather than replace direct observation and physical assessment (Hanafiah et al., 2023).

Safety management required attention before, during, and after each training session. Informants emphasized the need to identify exercise risks, inspect equipment, demonstrate correct technique, and adjust movement difficulty to the physical condition of each participant. Short transitions may maintain training intensity but can also reduce the time available for technical correction when the number of participants exceeds the instructor's supervisory capacity. The progression of load and exercise complexity must therefore remain compatible with movement proficiency and recovery. A soldier who has not mastered a movement may require a simpler variation before performing the exercise under higher resistance or faster tempo. The same consideration applies to personnel returning from injury, experiencing low fitness, or preparing for a task with specific physical demands. Current resistance-training guidance supports individualization based on goals, safety, and ability, while evidence on injury-prevention programs indicates that supervision and adherence materially influence program effectiveness (Currier et al., 2026; Valentin et al., 2024). Safety should consequently be embedded in circuit design rather than treated as a separate administrative procedure.

The training literature provides a basis for evaluating future modules, but does not validate the numerical ranges previously included in this case report (Ramos-Campo et al., 2021). Initial assessment, documented workload decisions, and periodic review are proposed organizational improvements. Their feasibility and effects require prospective evaluation. The principal contribution remains a contextual description of the conditions surrounding circuit training implementation, rather than a validated implementation framework.

KESIMPULAN

At the Army Physical Training Service in Cimahi, structured schedules and assessment standards coexisted with uneven participation, repetitive routines, and limited workload individualization. Informants perceived circuit training as a useful format for exercise variety and group engagement. These findings describe local implementation conditions and perceived benefits; they do not demonstrate physiological effectiveness.

The immediate practical priorities are to clarify instructor responsibilities for workload adjustment, document participation and session decisions, and review

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equipment availability against group size. Adaptable modules are a recommendation for development and evaluation, rather than a tested product of this study. The findings may inform consideration of similar institutional training settings, subject to differences in resources, duties, and personnel characteristics.

The single-site design, reliance on reported accounts, and limited documentary subset restrict interpretation. The relationship between the 11-person record and the soldier interview sample is unresolved, and the supplied material does not support systematic comparisons between ranks or participant groups. Future qualitative research should examine instructor decision-making, rank-related communication, and contrasting experiences across units. Prospective or mixed-method studies could subsequently evaluate implementation feasibility and physical outcomes.

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