

Translating Dunhuang Mural Imagery into Dance through Evidence-constrained Embodied Reconstruction

Yahan Zheng* , Muhammad Fazli Taib bin Saearani*

Faculty of Music and Performing Arts, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim,
Perak, Malaysia

*Corresponding Authors

DOI: <https://doi.org/10.47772/IJRISS.2026.100900166>

Received: 13 September 2026; Accepted: 18 September 2026; Published: 05 October 2026

ABSTRACT

How can Dunhuang mural imagery inform continuous dance without turning modern choreographic choices into historical claims? This study develops a claim-level framework through two contrasting cases: the back-playing pipa figure in Mogao Cave 112 and the dancer groups on the north wall of Cave 220. Official digital images and cave records are read alongside dance-notation scholarship, pedagogical texts, and accounts of Silk Road Flowers and Rain. A supplementary documentary check examines the south-wall music-and-dance scene in Cave 220. Qualitative image and documentary analysis distinguishes direct evidence, constrained inference, modern choreographic construction, and indeterminate content. The principal cases support descriptions of depicted bodily and spatial relations but do not establish unique transitions, rhythms, or dynamics. Notation supplies a different kind of temporal evidence without a verified correspondence to these mural figures. Evidence-constrained embodied reconstruction makes these boundaries explicit through source-specific decision rules and alternative-pathway checks. The contribution is a transferable procedure for auditing movement claims, provisionally demonstrated within a limited corpus; independent coding reliability and wider applicability remain untested.

Keywords: Dunhuang dance; Dunhuang murals; movement translation; dance iconography; evidence-constrained embodied reconstruction

INTRODUCTION

The Mogao Caves at Dunhuang preserve Buddhist art produced across a long historical span. UNESCO records 492 extant caves, approximately 45,000 square metres of murals, and more than 2,000 painted sculptures, dating from the fourth to the fourteenth century; the site was inscribed on the World Heritage List in 1987 [1]. Dance and music imagery within this corpus provides evidence for medieval bodily representation, instruments, imagined ritual performance, and visual culture. Its interpretation requires attention to a difference of medium: a mural presents composed bodily relations, whereas performance unfolds through changes of weight, force, direction, and timing. How those depicted relations constrain a contemporary movement phrase is the methodological problem addressed here.

The first case selected for this study is Mogao Cave 112. Digital Dunhuang identifies it as a Middle Tang cave and locates the Illustration of the Sutra on the Contemplation of Amitayus on the eastern section of the south wall, where a music-and-dance scene appears in the foreground [2]. The Dunhuang Academy's cave description highlights a celestial musician-dancer (伎乐天) who holds a pipa behind the body while dancing, an image now widely known as the back-playing pipa pose (fantan pipa, 反弹琵琶) [3]. The second case is Cave 220. Digital Dunhuang provides a locatable digital image of the Medicine Buddha Sutra illustration on its north wall [4]. The Dunhuang Academy records two orchestras and two groups of dancers in this scene and notes inscriptions dated to the sixteenth year of the Zhenguan reign, or 642 CE [5]. The two cases present different evidentiary problems. Cave 112 foregrounds the relation between a single body and an instrument; Cave 220 foregrounds relations

among groups of dancers, long scarves, musicians, and pictorial space. Their contrast permits a focused examination of what static images preserve about movement and what remains temporally absent.

Research on music and dance in Dunhuang murals provides a systematic foundation for identifying instruments, performer groupings, and pictorial contexts [6]. Historical commentary on the creation of Silk Road Flowers and Rain (《丝路花雨》) demonstrates that the modern dance drama selected, reorganized, and artistically fictionalized Dunhuang materials rather than treating murals as movement scripts that could simply be copied [7]. The pedagogical tradition that followed translated curves, hand positions, bodily orientations, and depicted figures into trainable movement vocabularies. Gao Jinrong's Dunhuang Dance Course is a foundational text in this process [8]. Shi Min developed more detailed teaching materials around celestial musician-dancer images [9]; Jin Liang organized mural poses in relation to a Dunhuang dance pedagogy [10]; and Shi Min and Qin Kunzhou extended this work to male celestial musician-dancer images [11]. Together, these publications show that Dunhuang dance has acquired a stage history and an embodied pedagogical history of its own.

The formation of a modern tradition requires equal care in the use of the term reconstruction. DeAeth examines Gao Jinrong and Dunhuang dance through the concept of invented tradition, emphasizing the role of pedagogy, institutions, and present-day bodily practice in producing continuity [12]. Xu Qi's reconsideration of Dunhuang dance elements connects pictorial form with movement principles [13]. Xu Qi and Jia Yi subsequently address the creative transformation of Dunhuang music-and-dance heritage [14], while Li Qi and Zong Xueliang propose a layered movement from visible appearance to cultural bearing and embodied actuality [15]. These studies converge on an important point: the passage from mural to dance is not a single act of copying, but a multi-level translation from visual material into embodied knowledge.

Dunhuang dance notation offers a separate line of evidence. Wang Xiaodun and Gao Yuxing examine the historical formation and disappearance of the notation as a cultural representation [16]. Wen He distinguishes musical beat from dance beat (wupai, 舞拍), arguing that dance has a relatively independent temporal organization [17], and later studies songpai (送拍), a notational device associated with the supplementation or organization of dance beats [18]. Lin Sufang presents new evidence for interpreting manuscript P.3719v [19]. This scholarship establishes that Dunhuang documents contain information concerning sequence, rhythm, and the recording of movement. It does not, however, demonstrate that a particular notation sign corresponds to the back-playing pipa figure in Cave 112 or to either group of dancers in Cave 220. Notation can clarify the category of historical temporal evidence, but it cannot supply missing movement for these murals without a verified link.

Dance iconography has long cautioned scholars to distinguish pictorial representation, visual convention, and performed practice. Seebass argues that dance images must be interpreted through their material type and context and with attention to the distance between representation and performance [20]. Research on dance reenactment similarly shows that historical bodies are not transparently restored by archives. Selecting sources, interpreting gaps, and using present-day bodily techniques are themselves acts of reconstruction [21]. A recent study of Encountering Dunhuang (《相遇敦煌》) links imagery from Caves 112 and 220 to a contemporary dance work and thus confirms that the conversion of static figures into stage continuity is a current research problem [22]. Because that study draws on performance imagery whereas the present research excludes video, it is used only to establish the scholarly context and is not included in the coding of the two cases.

Existing research has extensively discussed mural forms, Dunhuang dance pedagogy, pose reconstruction, and cultural transformation. Less attention has been given to auditing individual claims about how a depicted configuration becomes a movement phrase. For the back-playing pipa figure, identifying the instrument behind the torso and specifying how it arrived there are different analytical tasks. The latter introduces an initiation order, a weight transfer, and an object pathway. The research gap concerns how to identify and justify that added information.

The issue also changes how historical fidelity in contemporary Dunhuang dance should be evaluated. If assessment is limited to whether a frozen stage pose resembles a mural figure, the movements, rhythms, dynamics, and spatial routes connecting one pose to another disappear from view. Yet transition is not secondary filler in dance. It determines how movement becomes a phrase, how style is embodied, and how continuity is

perceived. The present study therefore shifts attention from what pose has been retained to how the absence between poses is managed. This shift makes the contribution of modern choreographers, teachers, and dancers analytically visible without confusing that contribution with recovered Tang-dynasty practice.

Three research questions guide the article. First, what bodily information can be directly supported by the selected images in Caves 112 and 220? Second, which requirements of bodily realization may be inferred without specifying an ancient movement sequence? Third, how can historical evidence, bodily inference, modern choreographic construction, and indeterminate content be distinguished in accounts of mural-to-dance translation? The study contributes an explicit decision procedure at the level of the movement claim, an account of when different source types may support the same claim, and worked examples exposing the boundary between depicted relations and proposed transitions. The two principal cases establish a provisional methodological demonstration, not a representative account of Dunhuang imagery or a validated reconstruction of Tang-dynasty dance.

LITERATURE REVIEW AND THEORETICAL POSITIONING

The Modern Formation of Dunhuang Dance and Its Mural Sources

Music-and-dance imagery in the Dunhuang murals belongs to broader configurations of Buddhist sutra illustrations, donor representation, and Pure Land imagination. The posture of a figure, the instrument it holds, and its relationship to surrounding performers first serve pictorial narrative and religious visual order; these features were not created as instructions for later dancers. Zheng Ruzhong's systematic study of Dunhuang mural music and dance shows why instruments, orchestral formations, and dancing figures must be interpreted within a particular cave, wall, and iconographic programme [6]. A circulating cropped image cannot safely be detached from its location, nor can a popular name assigned to a pose determine its date, context, or movement quality. The minimum source record adopted here is therefore cave number, wall, sutra-illustration subject, and the figure's position within the composition.

The creation of Silk Road Flowers and Rain established a prominent modern moment in which Dunhuang imagery entered theatrical dance. Duan Wenjie did not deny artistic fiction when explaining the historical foundations of the drama. Instead, he treated historical material and stage invention as parts of the same creative process [7]. This position permits a double recognition: the work is constrained by Dunhuang imagery and Silk Road history, yet its characters, narrative relations, and continuous movement are organized by modern theatre-makers. Murals provide visual resources, scenic suggestions, and aesthetic reference; the dance drama rearranges them according to theatrical time, dramatic agency, music, and spectatorial structure.

Dunhuang dance textbooks subsequently turned aspects of this theatrical invention into repeatable knowledge. Gao Jinrong organized bodily material through basic training and combinations, bringing dispersed mural images into a relatively stable pedagogical order [8]. Shi Min and Jin Liang continued to systematize celestial musician-dancer figures, mural poses, and teaching principles [9,10], and later material on male figures broadened the range of bodies addressed by the pedagogy [11]. These texts preserve terminology, training logic, and morphological abstractions within modern Dunhuang dance. Their evidentiary limitation is equally important: they record how modern teachers have interpreted and organized mural resources, not a transcription of training procedures used by Tang-dynasty performers.

This study consequently treats historical source and modern tradition as connected but non-interchangeable levels. The selected walls of Caves 112 and 220 are locatable historical images. Silk Road Flowers and Rain and pedagogical publications are documents in the modern history of translation. The former substantiate statements about depicted content. The latter substantiate statements about the formation of Dunhuang dance since the twentieth century. If a textbook movement resembles a mural pose, the resemblance deserves description and interpretation, but does not by itself prove an uninterrupted line of transmission.

The description of Dunhuang dance as an invented tradition does not imply that it lacks historical grounding. Rather, DeAeth's analysis draws attention to the way traditions acquire stability through institutions, named

movements, pedagogical repetition, and performance [12]. The evidentiary question is not a binary choice between authentic tradition and fictional work. It is which source supports each component. Cave images constrain outlines and performer-object relations; scholarship and textbooks formulate principles; choreographers determine theatrical sequence; and dancers realize these relations with present-day training. Disaggregating these levels more accurately represents both the historical resources and modern achievements of Dunhuang dance.

From Pictorial Form to the Dancing Body

Xu Qi extends analysis beyond a small number of emblematic poses to relations among body parts and their movement principles [13]. This shift matters because it treats murals not simply as silhouettes for imitation but as visual configurations from which curves, inclinations, torsions, and coordinated bodily relations may be abstracted. Xu Qi and Jia Yi's account of creative transformation further clarifies that selection, refinement, and reconstruction occur when historical material enters stage practice [14]. Yet a more precise question remains when these broad principles are applied to an individual claim: does a proposed relation appear directly in the image, or has a researcher supplied a temporal process on the basis of practical dance knowledge?

Li Qi and Zong Xueliang's framework of form, bearing, and embodied actuality offers a layered way of thinking about the passage from a two-dimensional image to a living body [15]. Visible form may correspond to observable morphology, cultural bearing involves judgments about the work's overall quality and context, and embodied actuality requires a dancer to perform the material. The movement between these levels is not automatic. To pass from depicted appearance to physical realization, the dancer must add support, balance, breath, force, and timing, none of which is necessarily recoverable from the image. The present study adopts this layered awareness while reducing the unit of analysis to individually auditable statements so that broad concepts do not conceal specific inferences.

Bodily configuration (身体构形) is defined here as the set of relative relations available in a single image: bodily orientation; inclination of head and torso; extension or flexion of limbs; the relation of a supporting leg to a lifted foot; the position of hands in relation to an instrument or long scarf; distances between figures; and the directional lines produced by costume. Configuration is not synonymous with action. Even when a painting conveys intense movement, it preserves relations at a selected visual instant rather than the full changes preceding and following that instant.

A motion cue (动势线索) is a visual feature that invites a judgment of movement, such as an arcing scarf, displaced hair, a raised foot, bodily inclination, or asymmetrical posture. A motion cue can support the statement that a picture represents motion or suggests a direction. It does not normally support a precise speed, number of repetitions, duration, or complete trajectory. A long scarf extending to one side may be compatible with turning, but it may also arise from an arm action, a change of facing, pictorial convention, or several factors in combination. To convert such a cue into one exclusive movement pathway is to rewrite possibility as certainty.

The analysis separates postural nodes, or depicted bodily relations, from transitional processes such as entry, exit, initiation, weight transfer, and phrasing. This distinction makes it possible to ask which components of a proposed realization are source-supported and which require present-day decisions. Alternative pathways are retained whenever the evidence cannot discriminate among them.

Temporal Information in Dance Notation and Source Non-equivalence

Research on Dunhuang dance notation challenges the assumption that all relevant evidence is static and visual. Wang Xiaodun and Gao Yuxing locate the notation within a historical process of cultural formation, use, interpretation, and disappearance [16]. Wen He's distinction between musical beat and dance beat indicates that dance timing cannot be reduced to accompaniment and that manuscripts contain organizational problems requiring movement-specific interpretation [17]. His subsequent study of songpai further addresses the relationship between notation signs and the supplementation of dance beats [18]. Lin Sufang's analysis of

P.3719v demonstrates that the shapes, repetitions, and textual contexts of particular manuscripts continue to yield new interpretive evidence [19].

Three cautious conclusions follow. First, the Dunhuang manuscript corpus includes documents associated with the recording of dance. Second, such notation contains information relating to order, repetition, or beat rather than merely supplying names of actions. Third, interpretation depends upon the manuscript version, textual context, and specialist argument; it cannot be freely mapped onto modern movement habits. Dunhuang dance notation is therefore an indispensable point of reference for understanding historical temporal evidence.

The complementarity of notation and mural does not establish direct correspondence. The present study uses source non-equivalence (来源非等价性) as an operational term for the non-interchangeability of sources with respect to a particular movement claim. Its theoretical basis lies in dance iconography's attention to the function and context of representation [20] and reenactment scholarship's recognition that archival material is reworked through present-day practice [21]. These approaches imply that evidence retains the conditions of its production when it enters a reconstruction. A pictured pose, a manuscript sign, and a textbook combination cannot therefore inherit one another's evidentiary force simply because all concern dance. The term names this specific problem of cross-source substitution; it is not proposed as a separate general theory or as an absolute incompatibility between media.

Source non-equivalence is claim-relative and can be reduced by a documented connection. For example, a caption explicitly relating an image to a notated passage would support comparison more strongly than a shared regional origin. Date and provenance establish contextual compatibility but do not alone identify the same performed sequence. No verified passage has been linked to the selected figures in Caves 112 or 220. Combining their poses with an unrelated beat pattern would consequently be a modern reconstruction experiment. Its coherence could be assessed, but it would not demonstrate the recovery of that historical dance.

Restrictive Insights from Dance Iconography and Reenactment

Dance iconography asks how an image functions as evidence for dance history, not merely what it appears to depict. Seebass's insistence on source type and context is directly relevant to Dunhuang [20]. Dancers in Buddhist sutra illustrations also serve narrative, ornamental, and compositional functions. A painter may compress movement, intensify curves, or alter proportion to make motion legible within a limited field. If such pictorial operations are ignored, a decorative effect may be treated as a literal anatomical position, or a flowing scarf may be mistaken for a precisely measured trajectory.

Dance reenactment studies redirect attention to the present-day body that meets historical material. The research collected by Franko shows that reenactment does not cancel contemporaneity; it re-establishes a relationship to the past through present bodies, memories, archives, and performance choices [21]. From this perspective, a gap is not only a failure of preservation. It is a methodological condition that requires the researcher to document how a body responds, where interpretation occurs, and how decisions are named.

These two approaches lead the present study to reject both the mural as a silent movement score and modern invention as damage to historical authenticity. Images can constrain selected bodily relations. Present-day bodies can test whether a pose is practicable. Choreography can give movement a particular rhythm and expressive form. Yet these activities do not share the same evidentiary status. Only by marking observation, bodily inference, and artistic decision separately can an analysis respect the historical limits of its sources while locating the work performed by modern artists.

Research Gap and Analytical Propositions

Previous scholarship explains the resources and interpretive practices through which Dunhuang dance has developed. The unresolved task is to distinguish the evidentiary status of a movement claim: whether it reports visible form, attributes an interpretation to a document, infers a bodily requirement, or describes a modern choice. Without this distinction, "compatible with" can become "historically occurred" without additional support.

Four analytical propositions guide the case reading: depicted spatial relations usually support narrower claims than a complete movement phrase; an endpoint may admit alternative entries and exits; physical plausibility does not establish historical occurrence; and modern choreography determines transitions that the sources leave open. The cases examine how these propositions operate in contrasting configurations. They do not independently validate the framework from which the propositions derive.

MATERIALS AND METHODS

Research Design and Scope of Materials

This study adopts a qualitative documentary design using publicly accessible and independently retrievable images and texts. It does not use performance video, motion-capture data, interviews, or dancer experiments. Its purpose is not to compare stage versions frame by frame, but to determine how far the available evidence permits movement claims to proceed. The principal images are the publicly accessible digital caves for Caves 112 and 220 [2,4]. Dates, wall locations, and official descriptions are checked against the Dunhuang Academy's cave pages [3,5]. This procedure enables readers to return to a documented source location and avoids relying on unattributed or secondarily cropped images.

The principal cases were purposively selected to contrast two demands of movement translation. Cave 112 concentrates body-instrument coordination in the back-playing pipa figure on the south wall; Cave 220 introduces relations among dancer groups, scarves, and musicians on the north wall. Both have locatable images and official descriptions, permitting a common source-checking procedure. Their difference in relational scale, rather than their fame or presumed representativeness, motivates the comparison. At the claim level, the pair is sufficient to demonstrate how the same decision rules handle object placement, bodily coordination, group relations, and unsupported temporal detail. It is insufficient to establish the distribution of those claims across Dunhuang or the framework's reliability in other iconographic settings.

A small supplementary documentary check uses the Dunhuang Academy's account of the music-and-dance scene on the south wall of Cave 220 [5]. This additional scene tests whether source attribution remains explicit outside the two principal image analyses; it is not a third independent cave case. Table 1 distinguishes the remaining contextual materials from evidence for the depicted figures. Modern pedagogical and theatrical sources support claims about modern translation, while notation scholarship supplies a separate account of historical temporal organization.

Materials were included if they met four criteria: a stable bibliographic record or authoritative publisher; a locatable cave, wall, manuscript, or modern practice; direct relevance to bodily configuration, temporal organization, or modern translation; and a scope that could be accurately represented. A source was not ranked more highly because it supported a preferred conclusion, and citation frequency was not substituted for source verification. Where a full text was unavailable but the bibliographic record could be verified, only information supported by the title, abstract, catalogue, or clearly retrievable conclusion was used.

Table 1. Research materials and their evidentiary functions

Material group	Core materials	Claims supported	Evidence not supplied
Murals and cave records	Principal images: Cave 112 south wall and Cave 220 north wall [2–5]; supplementary record: Cave 220 south wall [5]	Depicted relations in principal images; provenance and attributed scene descriptions	Complete sequence, duration, dynamics, or a unique transition
Mural music-and-dance and creative history	Zheng Ruzhong and historical accounts of Silk Road Flowers and Rain [6,7]	Iconographic context, identification of music-and-dance scenes, and modern concepts of translation	The movement procedure used by Tang-dynasty performers

Modern pedagogy and reconstruction research	Textbooks, pedagogical systems, and pose-reconstruction studies [8–15]	Morphological abstraction, training logic, and principles of modern reconstruction	An uninterrupted ancient transmission chain
Dunhuang dance notation	Studies of P.3501, S.5643, P.3719v, and related manuscripts [16–19]	Notation signs, dance beat, songpai, and problems of historical temporal organization	One-to-one correspondence with poses in Cave 112 or 220
Methodological scholarship	Dance iconography and dance reenactment [20,21]	Boundaries of image interpretation, historical recovery, and present-day bodily intervention	Direct factual evidence for the Dunhuang cases

Unit of Analysis and Evidence Levels

The primary unit of analysis is not an entire mural or dance work, but an individually testable movement claim. “The figure holds the pipa behind the body” is a claim about a visible endpoint relation. “The figure first turns and then moves the pipa behind the body” adds an initiation sequence and a trajectory. The first statement can be checked against a specified wall; the second cannot be recovered from the same static image. Decomposing a composite description exposes added information about time, direction, and dynamics.

The four evidence levels in Table 2 are coding categories, not an ordinal scale of truth or artistic value. Direct evidence is restricted to what a specified image visibly depicts or what a cited document explicitly states. A document’s interpretation is direct evidence that the interpretation was made, not automatic proof that the represented action occurred. Constrained inference identifies a conditional requirement of realizing the configuration, or a non-exclusive interpretation supported by stated visual cues. Modern choreographic construction identifies a documented contemporary choice or an explicitly proposed option. An unsupported historical claim remains indeterminate; lack of historical support alone does not establish a modern origin.

The coding also differentiates five types of movement information. Spatial configuration includes direction, level, distance, limb position, and performer-object relations. Temporal structure includes beginning and end, sequence, duration, repetition, and pause. Dynamic quality includes weight, speed, continuity, impact, and control. Transitional mechanism includes weight shift, order of bodily initiation, and pathways of entry and exit. Expressive interpretation includes emotion, characterization, and stylistic naming. Static murals are relatively strong sources for the first type, more limited for the second through fourth, and particularly dependent upon context and interpretation for the fifth.

Coding begins by dividing each statement into a single proposition and recording its source and referent: the depicted image, a documentary statement, a proposed realization, or a historical performance. If no information beyond the source is added, the proposition may be direct evidence. If it adds a bodily requirement or a possible movement interpretation, its assumptions and alternatives must be stated for constrained inference. A particular contemporary solution is modern construction only when documented or clearly presented as a proposal. If the source cannot resolve the proposition, it is indeterminate. Thus “the scarf extends to one side” describes form; “the scarf is compatible with turning” is constrained inference; and “the dancer turned rapidly” remains historically indeterminate. Mixed sentences receive separate classifications rather than a single stronger label.

Table 2. Evidence levels and rules of scholarly formulation

Category	Definition	Permitted formulation	Formulation to avoid
Direct evidence	Visible image content or an explicitly attributed documentary statement	“The image shows ...” or “The source records ...”	Treating a source’s interpretation as proof of historical action

Constrained inference	Conditional bodily requirement or non-exclusive interpretation grounded in stated cues	“Realization requires ...”; “These cues are compatible with ...”	“The Tang dancer necessarily performed A before B”
Modern choreographic construction	Documented modern choice or explicitly proposed contemporary option	“Modern choreography may select ...”	Calling an unsupported historical claim a documented modern choice
Indeterminate	The proposition cannot be resolved by the available sources	“The available evidence does not determine ...”	Filling the gap through resemblance, common sense, or categorical wording

Image-Evidence Analysis Procedure

The analysis proceeded through four rounds. The first established provenance by recording cave number, period, wall, sutra-illustration subject, position of the figure, and publishing institution. The second described only visible relations and avoided temporal words such as first, subsequently, continuously, or rapidly. It also avoided imposing terms from modern dance technique. The third decomposed each visible relation into bodily axis, support and raised foot, limb direction, performer-object relation, scarf or hairstyle direction, relations among figures, and pictorial space. Only in the fourth round were the variables required to realize the pose as movement discussed and assigned an evidentiary level.

Relational language was used in place of language implying a completed action. “The pipa is positioned behind the body” describes a spatial relation. “The right arm first carries the pipa behind the body” posits the initiating body part and sequence. The former remains within the image evidence; the latter requires an additional source. Similarly, “one foot is raised” is a positional statement, whereas “the dancer is completing a jump” adds action type, phase, and dynamic quality. Such grammatical control turns evidence classification into a practical discipline of scholarly writing.

Scarves and hairstyles were treated separately because their pictured form may result from bodily motion, material behaviour, pictorial convention, compositional rhythm, or the condition of preservation. Their direction is directly observable; its relation to a movement is stated conditionally. Where an arcing scarf and bodily orientation jointly support an interpretation of turning, the analysis uses “compatible with rotation” or “creates a rotational motion cue.” It does not specify the exact path, number, or velocity of rotations without temporal evidence.

The counterexample check considers alternative entries or exits as analytical scenarios, not as experimentally verified movements. For Cave 112, foot-led, instrument-led, and torso-led initiation expose variables that an endpoint alone cannot order. For Cave 220, turning in place, travelling, and arm-led scarf movement similarly challenge an exclusive rotational reading. The check asks whether the source rules out alternatives; it does not demonstrate that every proposed pathway is anatomically feasible. Feasibility would require a separate embodied study.

Documentary Triangulation and Argument-Chain Audit

Documentary triangulation began by asking whether two sources addressed the same object. A cave description and a digital image may corroborate the same cave, wall, and figure. Dance notation and the two murals, in the absence of a specific association, can be compared only as source types, not as evidence for one particular movement. The same caution applies to modern textbooks: they show how modern training organizes certain forms, but cannot on their own establish an ancient sequence.

The argument-chain audit links each proposition to its source, observable or quoted basis, added assumption, and evidentiary category. Table 3 presents the resulting distinctions, including borderline cases. The audit also

asks whether removing an interpretive cave description would change the classification. The pipa's depicted position remains available as image evidence, whereas the historical identification of Huxuan or Huteng depends on an attributed, qualified interpretation. This is a check on the dependence of a claim on its source, not independent confirmation by a second coder.

Procedural transparency is supported by stable case names, explicit decision rules, and negative recording of unresolved speeds, beat counts, initiation orders, and routes. The Academy's qualified identifications of Huxuan dance (胡旋舞) and Huteng dance (胡腾舞) remain qualified [5]. Table 3 separates direct evidence that the Academy proposes those names from the indeterminate claim that either identity is historically established. These controls make classifications open to inspection and disagreement; they do not supply a measured intercoder reliability result.

Case Analyses

Locating the Back-playing Pipa Image in Cave 112

Cave 112 was constructed during the Middle Tang period when Dunhuang was under Tibetan rule. Although the chamber is small, several sutra illustrations are arranged across its walls. The Dunhuang Academy identifies the eastern part of the south wall as an Illustration of the Sutra on the Contemplation of Amitayus and describes a celestial musician-dancer holding the pipa behind the body, dancing with the feet, and displaying extended dance ribbons; it also observes an apparent rhythmic motion in the toes [3]. The Digital Dunhuang navigation locates the same sutra illustration on the eastern section of the south wall and notes the music-and-dance scene in the foreground [2]. The two official sources therefore agree on cave, wall, and iconographic location.

This provenance identifies the object of analysis, but it does not by itself resolve movement. Phrases in the official description such as dancing with the feet and apparently moving to the beat already interpret pictorial motion and must be distinguished from directly visible form. The audible relations are these: the figure holds a pipa whose principal body lies behind the torso; the head, torso, arms, and legs form an asymmetrical configuration; the feet are not shown in a parallel standing position; and ribbons extend around the body. The specific action of the feet, the number of toe movements, and the beat pattern remain separate questions.

The recognizability of the back-playing pipa pose depends strongly on the bodily relation to the instrument. If the pipa's placement is removed, the inclination and flexion of the body still convey dance, but the image loses much of its emblematic identity. The instrument is therefore not an external ornament; it is part of the configuration. Movement translation must consider how the body supports itself, how both hands maintain the performer-instrument relation, and how the pipa's volume and position constrain torso and upper limbs.

From Endpoint Configuration to Movement Variables

For a present-day dancer to realize the depicted body-instrument relation, support, coordination, and object handling must be considered together. The visible placement of feet should not be mistaken for a measurement of weight distribution. Similarly, the placement of hands and pipa raises questions about joint range and instrument control without resolving them. These are conditional requirements of physical realization, not observations of the historical performer's balance or technique.

Three entry strategies illustrate the unresolved initiation problem. A dancer might adjust foot position before repositioning the torso and instrument; the arms and instrument might initiate; or these changes might occur together during travel or turning. These scenarios are hypotheses for practice-based testing. Their analytical purpose is to show which decisions the image leaves unspecified, not to certify a particular route as feasible or historically used.

Exit is not necessarily a reversal of entry. A dancer may return the pipa to the front, continue rotating in the same direction, lower the centre of weight into a subsequent pose, or change the instrument's position before changing the feet. Each decision creates a different movement phrase and stylistic effect. The mural constrains the bodily and instrumental relations that cannot be ignored at the depicted moment, but it cannot establish a unique

continuation. Creativity in modern Dunhuang dance occurs not only in reaching the iconic pose, but also in how it appears, is sustained, and disappears.

Temporal variables include preparation, speed of arrival, duration of the held configuration, accent, and exit rhythm. Dynamic variables include whether the pipa moves continuously or with a sudden placement, whether the torso inclination unfolds with controlled extension or arrives rapidly, and whether the foot lightly marks or forcefully stamps. None can be measured from the static image. Even when the official description uses expressions equivalent to “a clear sense of beat” or “swaying,” they should be treated as verbal interpretations of visual motion cues, not converted into beat counts or dynamic parameters [3].

Cave 112 therefore differentiates an observable body–instrument relation from the support and coordination questions raised by its realization. Table 3 assigns these propositions separately. A specific modern entry phrase can be studied as contemporary choreography, but its resemblance to the endpoint cannot establish ancient continuity.

Group Structure in the Medicine Buddha Sutra Illustration of Cave 220

Cave 220 is a major Early Tang cave. In 1943, the removal of overlying Song-dynasty murals revealed ink inscriptions dated to 642 CE on the east and north walls, providing evidence for the date of the relevant early paintings [5]. The Medicine Buddha Sutra illustration on the north wall is organized around seven Medicine Buddhas with bodhisattvas and guardian figures. Lamps and an extensive music-and-dance scene occupy the foreground. According to the Dunhuang Academy, the orchestras on the two sides contain 28 musicians using 15 types of instrument, and two groups of dancers are positioned between them [5]. The dancers are consequently not isolated figures; their visual significance is formed in relation to musicians, lights, and an imagined Pure Land setting.

The two groups supply motion cues different from those in Cave 112. One group extends the arms and scarves; hairstyles and long fabric spread outwards, and the official account states that the figures appear to rotate. The other raises arms and feet in a configuration suggestive of energetic stamping or leaping. The page cautiously proposes that the groups may represent Huxuan and Huteng dances [5]. This qualification is retained because assigning a historical dance type is more specific than observing form and cannot be treated as uncontested on the basis of a static image alone.

Directly visible elements include the number and relative location of figures, directions of arms and raised feet, displacement of scarves and hairstyles, and spatial relations among dancers and musicians. Together they create a strong impression of movement and substantiate the conclusion that the scene is intended to represent dancing. They do not indicate where each dancer began, whether the dancers exchanged positions, how often a movement was repeated, whether the two groups were strictly synchronized, or how a formation changed. A group composition presents simultaneity; it does not document the evolution of a formation.

Cave 220 also shows why the trajectory of a prop cannot simply be equated with the trajectory of a body. Long scarves form continuous arcs that may be read as traces of rotation. Yet their direction may be produced by arm action, material inertia, a change of bodily facing, pictorial organization, or a combination of these factors. Even if rotation is a well-supported interpretation, the image cannot determine axis, angle, number of turns, or speed. The displacement of hair intensifies the motion cue but is not a precise measurement of movement.

Constrained Inference of Group-dance Continuity

A stage translation of the Cave 220 groups requires decisions about shared space and time. If a choreographer seeks to retain the mural’s relational structure, the arrangement of figures, fabric, and musicians provides reference points. Retaining those relations is an explicit reconstruction aim, not a universal bodily necessity or a rule imposed by the mural. Synchronization, crossing routes, and the placement of musicians on stage remain contingent choices.

Spatially, performers might turn in place or travel along circular, arcing, or intersecting paths. Temporally, they might initiate together, enter in canon, pursue one another, or alternate. Dynamically, choreography might emphasize the continuity of rotation or the accents of stamping and elevation. Each choice changes how the relation between the two groups is understood. Where the historical material does not specify a choice, it belongs to modern choreographic construction. Its coherence may be assessed against pictorial relations, physical feasibility, and the work's overall structure, but it should not be named as the mural's original movement.

Alternative scarf pathways illustrate why a rotational reading remains conditional. Turning in place with arm movement, travelling while tracing an arc, and moving fabric before reorienting the torso are possible analytical scenarios. Without testing bodies and materials, their practical feasibility remains open. The relevant documentary result is that the mural does not select one mechanism or establish a complete route.

Compared with Cave 112, Cave 220 expands the meaning of the movement between poses. The first case primarily concerns coordination within one body and between that body and an instrument. The second also concerns synchronization, displacement, route, and depth among multiple performers. Group continuity requires not only that each dancer move from one pose to another, but that several dancers form an intelligible structure in shared time. The mural can preserve one section of that group arrangement, not the processes by which it forms and disperses.

The Cave 220 analysis locates uncertainty at two different points: interpreting visual cues as actions, and attributing those actions to named historical dances. The former permits conditional movement hypotheses; the latter requires corroboration beyond the qualified official identification. Neither warrants an exact group sequence.

Comparison of the Two Cases

The cases differ in the scale at which added movement decisions arise. Cave 112 emphasizes coordination between one body and an instrument, while Cave 220 introduces coordination among bodies and fabric. Applying the same rules to these different relations demonstrates the procedure's internal coherence across the selected examples. This comparison remains within closely related Buddhist mural settings and supplies no estimate of wider representativeness.

Table 3 records the boundary decisions rather than reproducing the descriptive case narratives. In particular, it distinguishes visible foot placement from actual weight bearing, an official dance-type attribution from historical certainty, and a hypothetical choreographic route from an observed contemporary performance. These distinctions are consequential because a reconstruction may resemble its source while its explanation overstates what the source establishes.

The comparison also indicates that visual intensity and procedural specificity should be assessed separately. A forceful scarf arc can support an impression of motion without distinguishing among several possible mechanisms. The framework therefore asks what additional evidence would discriminate between interpretations, rather than treating a stronger impression as a more complete record.

Table 3. Audit of movement claims across the two cases

Case and claim	Source anchor	Added assumption or decision	Boundary ruling	Category
Cave 112: pipa placement	Image and cave record: pipa behind torso [2,3]	Stage realization requires body-instrument coordination	Placement is observed; coordination is inferred; entry order unresolved	Placement: direct; requirement: constrained inference
Cave 112: feet and ribbons	Depicted feet and ribbons; descriptive	Interpreting placement as	Visible shape does not measure	Shape: direct; historical

	motion language [2,3]	weight bearing or a precise beat	support, force, or tempo	dynamics: indeterminate
Cave 220: dancer groups	North-wall figures and fabric; qualified motion description [4,5]	Rotation proposed from cues; synchronized travel proposed for staging	Turning is non- exclusive; a staging route is a hypothetical modern choice	Cue: direct; turning: inference; proposed route: modern construction
Cave 220: Huxuan and Huteng	Academy proposes dance-type names with qualification [5]	Treating that attribution as established historical identity	Attribution can be verified; identity cannot be established here	Attribution: direct; historical identity: indeterminate
Notation supplies exact mural beats	Notation scholarship concerns temporal organization [16– 19]	Assuming an unverified image– manuscript correspondence	Contextual comparison does not establish these figures' timing	Exact correspondence: indeterminate

Silk Road Flowers and Rain as a Document of Modern Translation

Silk Road Flowers and Rain is not used here as a video sample for movement comparison, but as a historical document of modern translation. Duan Wenjie's account of the drama's historical basis indicates that its creators drew figures, dance scenes, and formal resources from Dunhuang imagery and Silk Road history while producing artistic fiction according to dramatic structure and theatrical principles [7]. This source supports the proposition that the creators understood historical grounding and stage invention to coexist. It cannot establish that a particular transition in the dance drama continues an ancient movement from a specific cave.

Curves, hand positions, steps, and combinations stabilized in modern textbooks and works can be studied as the embodied history of the Dunhuang dance tradition itself [8–11]. Through teaching, rehearsal, performance, and intergenerational transmission, they have acquired a genuine continuity of practice. Recognizing that this continuity originates in modern construction does not diminish its artistic significance. It gives accurate positions to both the historical resources supplied by the murals and the knowledge created by choreographers, teachers, and dancers.

The study of Encountering Dunhuang indicates that contemporary works continue to use imagery associated with Caves 112 and 220 and remain concerned with the transfer from mural image to stage form [22]. Because the present study excludes video, it makes no independent claim about the work's particular movement routes. Its relevance is narrower: the conversion of static image into continuous body is not merely a historical issue associated with Silk Road Flowers and Rain, but an ongoing choreographic problem in contemporary Dunhuang dance.

RESULTS AND DISCUSSION

Murals Preserve Bodily Relations and Motion Cues

Across the principal cases, the most secure observations concern depicted relations and the visible features that invite movement interpretations. Foot placement must be distinguished from weight distribution, and scarf shape from the mechanism producing it. This distinction improves the precision of source-based description without excluding dance knowledge from subsequent interpretation.

The supplementary documentary check concerns Cave 220's south-wall Western Pure Land scene. The Academy describes musicians and dancing figures there and identifies a detail as south-wall dancers [5]. These statements support an attributed description of the scene. They do not establish that its performers used the north-wall dancers' technique, rhythm, or routes. A modern work might juxtapose the two scenes, but that linkage would require its own justification.

This additional scene tests a narrow boundary: a shared cave does not make movement information transferable between compositions. The same source-specific rules separate the recorded subject from an unverified relation between dances. Because this is a documentary check within Cave 220, it adds neither independent visual coding nor evidence of applicability across periods. Its value is to expose a tempting cross-scene inference while leaving the broader validation problem open.

The Sources Do Not Establish a Unique Transition

The alternative-pathway scenarios in the principal cases identify choices the sources cannot resolve. They provide a logical check against claims of a uniquely recoverable transition. As no movement trials were conducted, the result concerns evidentiary underdetermination rather than experimentally demonstrated equivalence among feasible pathways.

Underdetermination does not mean that reconstruction is arbitrary. Performer-object relations, directions, and group locations exclude options that clearly contradict the composition. Human support, joint organization, and object control also constrain physical feasibility. Constrained inference identifies these limitations without claiming historical uniqueness. It asks what any movement into the configuration must address, not exactly what a Tang-dynasty dancer did.

For choreography, underdetermination constitutes the generative space between poses. A choreographer selects rhythm, route, dynamics, and linkage from among compatible options so that the image can enter a larger work. The choice is constrained by the source and by the body, but also responds to music, stage space, characterization, and thematic purpose. Creativity in Dunhuang dance can thus be described precisely as the organization of an absent process rather than praised only through a general language of innovation.

Spatial and Temporal Evidence Cannot Be Directly Spliced

Dunhuang murals and dance notation are complementary at the level of source type. Murals principally preserve spatial configurations and scenic relations. Scholarship on dance notation demonstrates that some historical records contain questions of dance beat, songpai, sign order, and repetition [16–19]. Epistemologically, the two bodies of evidence jointly remind researchers that historical dance had both spatial and temporal organization.

A concrete combination of image and notation requires a documented connection to the same movement or performance context. Shared date or provenance may justify comparison, but cannot alone establish a particular sequence. No verified bridge links the selected figures to a notation passage. The proposition that “murals provide space and notation restores time” therefore describes complementary source capacities, not the recovery of these dancers’ movements.

Source non-equivalence also applies to modern pedagogy. The sequence in a textbook documents modern training and may reveal how teachers interpret a mural configuration. It does not substitute for evidence of Tang-dynasty temporal order. If a textbook places the back-playing pipa pose in a particular combination, that combination should be analysed as a source for modern pedagogical history, not projected backwards as a programme already present in the mural.

Minimum Bodily Requirements Are Not Historical Movement Facts

Bodily knowledge helps formulate requirements and possible routes when a configuration is considered for performance. In the present documentary design, it generates hypotheses about support, balance, object control, and coordination. It neither tests those hypotheses physically nor identifies a historical performer’s solution.

Minimum bodily requirement is the central principle of constrained inference. It does not prescribe a unique action. It identifies variables that every viable realization must confront. To reach the back-playing pipa configuration, the dancer must establish support and coordinate the instrument. To convert Cave 220 into group movement, the performers must organize shared time and space. Which body part initiates, how many beats are used, how weight is qualified, and which route a formation follows lie beyond that minimum.

This distinction corrects a common form of overstatement. A sentence such as “the mural dancer turns three times before playing the pipa behind the back” cannot acquire historical status merely because the movement is plausible. A more accurate formulation would be: “Modern choreography may use rotation to establish the opposing relation of instrument and torso; the mural does not determine the historical entry pathway.” Conditions, agent, and evidentiary scope are all explicit in the revised sentence.

Evidence-constrained Embodied Reconstruction

Evidence-constrained embodied reconstruction is proposed here as a procedure for making the provenance of movement claims explicit. Its initial demonstration lies in the distinction between what the selected sources depict or state and what an analyst or choreographer adds. Independent reliability, bodily feasibility, and applicability beyond this corpus are separate questions that the present analysis does not settle.

Table 4 summarizes the analytical sequence. Indeterminacy remains available at every operation: uncertain image detail, an unresolved source relation, or an untested transition must not be forced into a more affirmative category. For documentary analysis, the procedure ends with an auditable claim. For choreography, it may inform later movement exploration, which would require its own records and evaluation.

The model combines source criticism with attention to embodied decision-making. It permits modern invention to be described precisely while retaining limits on historical attribution. Its usefulness depends on whether another reader can identify the basis of a classification and explain a disagreement, not merely accept the analyst’s judgment.

Fidelity to a mural must therefore be evaluated beyond endpoint resemblance. An analysis should ask whether the source is locatable, whether its postural relations have been represented accurately, whether transitional actions are mistakenly described as historical fact, whether non-equivalent materials have been spliced, and whether modern choices are declared. A movement may resemble a mural at the level of pose while making excessive claims of recovery. Another may openly identify its modern construction while responding rigorously to the image’s core configuration. The latter displays greater evidentiary transparency.

Table 4. Analytical chain of evidence-constrained embodied reconstruction

Operation	Central question	Primary material	Result
Source location	Where does the image or text come from?	Cave number, wall, subject, date, and bibliographic record	Defines the object and excludes unattributed material
Configuration extraction	What does the material directly show?	Bodily direction, limb position, and object or interpersonal relations	Produces auditable spatial evidence
Constrained inference	What requirements or interpretations can be stated conditionally?	Explicit bodily assumptions, visual cues, and alternative scenarios	States bounded inferences; leaves feasibility untested
Modern construction	Which choices are documented or explicitly proposed?	Rhythm, dynamics, route, combination, and theatrical relation	Separates observed modern practice from a hypothetical option
Indeterminacy control	What cannot the available material answer?	Gaps, source non-equivalence, and counterexamples	Preserves evidentiary limits and prevents overclaiming

Implications for Research, Choreography, and Pedagogy

For research on Dunhuang dance, the framework extends attention from emblematic poses to the movement-generation chain. Researchers should not stop after identifying an S-shaped silhouette, a curve, or the back-playing pipa endpoint. They should also examine entry, exit, weight shift, bodily initiation, pause, and linkage.

This approach makes the formation of modern Dunhuang movement language more precise and prevents stable combinations in textbooks and stage works from being mistaken for uninterrupted ancient actions.

For choreography, evidence classification does not restrict imagination; it clarifies creative decisions. Several phrases may be developed from the same mural if the maker identifies which relations derive from the image, which pathways are inferences based on bodily feasibility, and which rhythms and dynamics answer the needs of the work. A choreographer need not claim complete reconstruction in order to establish value. The organization of continuity that the mural does not record is itself a substantive artistic contribution.

For pedagogy, textbook movements can be located within two coordinates. They transmit the norms, styles, and training methods of a mature modern Dunhuang dance system. They can also teach students to identify the evidentiary relation between movement and historical image. Students then learn not only how to form a pose, but why particular support is required, how transitions may be selected, and which components belong to the modern system. Historical awareness enters bodily training rather than remaining a prefatory lecture.

The procedure may be transferable to other traditions reconstructed from static images, but such transfer remains a proposition. Images that represent flight, supernatural bodies, or successive moments within one composition would require revised assumptions about support and temporal information. A successful extension would preserve source-specific attribution while demonstrating how the coding rules accommodate those differences.

Limitations

The two principal mural cases and the supplementary south-wall documentary check remain confined to two Tang-period caves. They demonstrate the procedure across selected body–object and group relations, but do not establish saturation, representativeness, or general validity. The supplementary scene is drawn from the same cave and institutional record as one principal case, so it cannot be treated as independent replication. Further testing should include contrasting periods, preservation conditions, and iconographic types, particularly figures whose pictorial bodies cannot be directly realized by a dancer.

The analysis relies on official digital images, cave descriptions, and published scholarship and cannot replace in situ examination. Pigment loss, later repainting, occlusion, two-dimensional reproduction, and screen viewing may affect the interpretation of detail. Official descriptions have high provenance value, but their identifications of dance type and motion must still be used at the strength indicated by their own wording. Institutional authority does not convert a qualified interpretation into direct observation.

Because the design excludes performance video, interviews, and movement experiments, the study cannot test which path a contemporary work actually takes or compare how dancers adjust support, object handling, and dynamics in rehearsal. Its contribution is a framework for documentary analysis and argument auditing, not an empirical measurement of performance outcome. Future studies may add recordings, rehearsal documentation, or dancers' accounts as new source levels, but these should supplement rather than replace historical images.

Coding was completed by one researcher and has not undergone independent intercoder agreement testing. Explicit rules and worked boundary decisions improve auditability, but their reliability remains unmeasured. A subsequent validation study should give independent coders the same source excerpts and atomic claims, use a separate calibration set, and retain initial judgments before discussion. Category-level disagreements, especially direct evidence versus constrained inference, should be reported alongside an agreement measure appropriate to nominal categories. Adjudicated consensus should be distinguished from initial agreement. This is a proposed validation procedure, not a completed component of the present study.

CONCLUSION

The selected mural analyses identify how claims change when depicted bodily relations are translated into proposed movement. Cave 112 foregrounds body–instrument coordination; Cave 220's north wall introduces group and fabric relations. The supplementary south-wall documentary check shows why information should

not be transferred between scenes solely because they share a cave. Together, these examples demonstrate a source-specific procedure without establishing comprehensive coverage of Dunhuang dance imagery.

The central distinction concerns the status of additions made during reconstruction. Requirements of support or coordination can be formulated conditionally, but an exact initiation order, rhythm, or route needs further evidence or explicit identification as a contemporary proposal. Bodily plausibility cannot establish historical occurrence, and the scenarios discussed here remain untested in performance.

Source non-equivalence names the related problem of treating different materials as interchangeable evidence for one movement claim. Murals, notation, and pedagogical texts can inform one another when their connections are demonstrated. Their complementary capacities alone do not reconstruct a shared historical sequence.

The specific contribution of evidence-constrained embodied reconstruction is thus an auditable procedure linking a movement claim to its source, added assumptions, and unresolved alternatives. It makes the creative work of modern choreographers, teachers, and dancers visible without projecting their choices backwards as Tang-dynasty facts. The framework remains provisional: broader sampling and independent coding are required before claims about its general applicability or reliability can be sustained.

Declarations

Ethics approval: Not applicable. This study analyses only publicly accessible historical images, documents, and bibliographic materials and does not involve human participants, human biological material, or animals.

Data availability: The principal cave images, official descriptions, and supplementary south-wall record are accessible through References [2]–[5]. Tables 2 and 3 provide the decision rules and worked claim audits. The remaining sources are identified in the reference list. No participant dataset or independent coder dataset was generated.

Conflict of interest: The authors declare no conflict of interest.

REFERENCES

1. UNESCO World Heritage Centre. (n.d.). Mogao Caves. Retrieved September 14, 2026, from <https://whc.unesco.org/en/list/440/>
2. Dunhuang Academy. (n.d.-a). Digital Dunhuang: Mogao Cave 112 (数字敦煌：莫高窟第 112 窟). Retrieved September 14, 2026, from <https://www.e-dunhuang.com/cave/10.0001/0001.0001.0112>
3. Dunhuang Academy. (n.d.-b). Mogao Cave 112 (莫高窟第 112 窟). Retrieved September 14, 2026, from <https://www.dha.ac.cn/info/1425/3617.htm>
4. Dunhuang Academy. (n.d.-c). Digital Dunhuang: Mogao Cave 220 (数字敦煌：莫高窟第 220 窟). Retrieved September 14, 2026, from <https://www.e-dunhuang.com/cave/10.0001/0001.0001.0220>
5. Dunhuang Academy. (n.d.-d). Mogao Cave 220 (莫高窟第 220 窟). Retrieved September 14, 2026, from <https://www.dha.ac.cn/info/1425/3598.htm>
6. Zheng, R. Z. (2002). Dunhuang bihua yuewu yanjiu [A study of music and dance in Dunhuang murals] (敦煌壁画乐舞研究). Gansu Education Press.
7. Duan, W. J. (1980). Zhenshi de xugou: Tan wuju Silu huayu de yixie lishi yiju [Authentic fiction: On the historical basis of the dance drama Silk Road Flowers and Rain] (真实的虚构——谈舞剧《丝路花雨》的一些历史依据). Literature & Art Studies (文艺研究), (2), 103–108.
8. Gao, J. R. (2002). Dunhuang wu jiaocheng [Dunhuang dance course] (敦煌舞教程). Shanghai Music Publishing House.
9. Shi, M. (2012). Dunhuang wudao jiaocheng: Jiyuetian wudao xingxiang chengxian [Dunhuang dance course: Embodying celestial musician-dancer images] (敦煌舞蹈教程：伎乐天舞蹈形象呈现). World Publishing Corporation Beijing.

10. Jin, L. (2020). Wuchu bihua: Dunhuang bihua wuzi yu Dunhuang wu jiaoxue tixi [Dancing the murals: Dance postures in Dunhuang murals and the Dunhuang dance pedagogy] (舞出壁画：敦煌壁画舞姿与敦煌舞教学体系). Shanghai Music Publishing House.
11. Shi, M., & Qin, K. Z. (2023). Dunhuang wudao jiaocheng: Jiyuetian nanzi wudao xingxiang chengxian [Dunhuang dance course: Embodying male celestial musician-dancer images] (敦煌舞蹈教程：伎乐天男子舞蹈形象呈现). Culture and Art Publishing House.
12. DeAeth, D. L. (2019). Gao Jinrong and the invented tradition of Dunhuang dance [Master's thesis, National Taiwan Normal University]. Airiti Library. <https://www.airitilibrary.com/Article/Detail/U0021-G060383007I>
13. Xu, Q. (2018). Dunhuang wudao xin linian: Yuansu xin faxian [A new concept of Dunhuang dance: Rediscovering its elements] (敦煌舞蹈新理念——元素新发现). *Dunhuang Research (敦煌研究)*, (2), 51–58.
14. Xu, Q., & Jia, Y. (2024). Dunhuang yuewu wenhua yichan chuangzaoxing zhuanhua lilun tanxi [A theoretical inquiry into the creative transformation of Dunhuang music and dance heritage] (敦煌乐舞文化遗产创造性转化理论探析). *Journal of Beijing Dance Academy (北京舞蹈学院学报)*, (4), 8–15.
15. Li, Q., & Zong, X. L. (2025). Dunhuang bihua wuzi fuxian: Cong xingmao dao shimao de litishi tanjiu [Reconstructing dance postures in Dunhuang murals: A multidimensional inquiry from appearance to embodied actuality] (敦煌壁画舞姿复现：从形貌到实貌的立体式探究). *Journal of Northwest Minzu University (Philosophy and Social Sciences) (西北民族大学学报（哲学社会科学版）)*, (4), 136–146. <https://doi.org/10.14084/j.cnki.cn62-1185/c.20250728.008>
16. Wang, X. D., & Gao, Y. X. (2018). Dunhuang wupu: Yige wenhua biaoxiang de shengcheng yu xiaowang [Dunhuang dance notation: The formation and disappearance of a cultural representation] (敦煌舞谱：一个文化表象的生成与消亡). *Art of Music: Journal of the Shanghai Conservatory of Music (音乐艺术（上海音乐学院学报）)*, (2), 6–18.
17. Wen, H. (2024). Dunhuang wupu de yuepai yu wupai [Musical beats and dance beats in Dunhuang dance notation] (敦煌舞谱的乐拍与舞拍). *Journal of Beijing Dance Academy (北京舞蹈学院学报)*, (4), 42–54.
18. Wen, H. (2025). Dunhuang wupu songpai yanjiu [A study of songpai in Dunhuang dance notation] (敦煌舞谱送拍研究). *Journal of Beijing Dance Academy (北京舞蹈学院学报)*, (4), 39–48.
19. Lin, S. F. (2025). Dunhuang wupu P.3719v jieyi xinzheng [New evidence for interpreting Dunhuang dance notation P.3719v] (敦煌舞谱 P.3719v 解译新证). *Dunhuang Research (敦煌研究)*, (5), 126–133.
20. Seebass, T. (1991). Iconography and dance research. *Yearbook for Traditional Music*, 23, 33–51. <https://doi.org/10.2307/768395>
21. Franko, M. (Ed.). (2017). *The Oxford handbook of dance and reenactment*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199314201.001.0001>
22. Ge, Y., & Abindinhazir, Z. B. (2025). Discovering the assimilation phenomenon of Dunhuang murals from the Tang Dynasty in contemporary Chinese dance works by taking the dance Encountering Dunhuang as an example. *International Journal of Academic Research in Business and Social Sciences*, 15(8), 12–19. <https://doi.org/10.6007/IJARBS/v15-i8/26078>