

## RESEARCH ARTICLE

# Unveiling the hidden narratives: investigating gender, identity, and activism in contemporary dance performances within the realm of social arts

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### ABSTRACT

**Objectives:** This study shows how contemporary dance serves as a dynamic platform for challenging and redefining notions of gender and identity. By analyzing a variety of contemporary dance performances, the research aims to reveal the underlying narratives that reflect and contest societal norms. Through a detailed examination of choreographic choices, movement vocabulary, and thematic elements, the study highlights how these components contribute to the deconstruction of traditional gender constructs. **Methods:** Additionally, the research investigates the role of contemporary dance as a form of activism, focusing on how performers use their craft to entertain, raise awareness, and provoke dialogue on social issues. An artificial neural network (ANN) was employed to estimate the relationships between gender fluidity, the challenge of social norms, and their effects on transformation potential, activist participation, and artistic expression. **Results:** The results indicate that increases in both gender fluidity and the challenge to social norms significantly enhance transformation potential, activist participation, and artistic expression. The accuracy of the ANN's predictions was validated through linear regression analysis, demonstrating acceptable error margins compared to experimental results. **Conclusions:** This study ultimately underscores the transformative power of contemporary dance in shaping social discourse and advocacy.

**Keywords:** contemporary dance; gender studies; social activism; artistic expression; identity politics; artificial neural networks

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## 1. Introduction

Contemporary dance has emerged as a potent medium for creative expression that surpasses conventional delimitations, enabling performers to engage with and contest social standards, especially those regarding gender and identity. Within the sphere of social artforms, contemporary dance productions offer artists a venue to communicate their viewpoints on pressing societal matters while also functioning as a catalyst for activism and sociocultural change. However, in spite of increasing acknowledgment of dance's aptitude as a means for social critique, further scholarly examination into the implicit narratives woven into such performances remains warranted<sup>[1-4]</sup>. By conducting a qualitative analysis of a curated selection of contemporary dance performances from diverse cultural contexts, this research seeks to unveil the nuanced

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layers of meaning and symbolism within the choreography, movement vocabulary, and thematic content<sup>[5-7]</sup>. Through this analysis, the study aims to shed light on the diverse ways in which dancers challenge societal norms, interrogate gender constructs, and advocate for change. Moreover, this research explores the role of dance as a form of activism, examining how performers utilize their artistry to raise awareness, provoke dialogue, and stimulate social discourse. By shedding light on the transformative potential of contemporary dance within the realm of social arts, this study not only contributes to the field of dance studies but also offers insights into the broader implications of artistic expression on gender, identity, and activism discourse. This research endeavors to deepen our understanding of the profound impact that contemporary dance can have as a vehicle for unveiling hidden narratives, promoting social awareness, and shaping societal perceptions and attitudes<sup>[7-9]</sup>. The objective of this study is to investigate the intersection of gender, identity, and activism in contemporary dance performances within the realm of social arts. It aims to unravel the hidden narratives embedded within these performances and explore how dancers challenge societal norms and engage in activism through their artistic expressions.

While existing research has explored various dimensions of contemporary dance, this study uniquely focuses on unveiling hidden narratives and examining the transformative potential of these performances. Utilizing a qualitative research approach, it delves into the intricate layers of meaning found in choreographic choices, movement vocabulary, and thematic content, offering insights into how contemporary dance shapes social discourse and challenges traditional gender norms<sup>[10-14]</sup>. The research aims to illuminate the multifaceted nature of contemporary dance as a platform for exploring and contesting gender and identity<sup>[15-17]</sup>. By analyzing a curated selection of performances from diverse cultural contexts, the study reveals how dancers reflect, deconstruct, and question established gender constructs through their artistic expressions. Furthermore, it examines the role of dance as a form of activism, investigating how performers raise awareness, incite dialogue, and provoke societal change. Guided by key research questions, the study seeks to understand how artistic elements in contemporary dance reflect and interrogate gender identities, challenge societal norms, and serve as tools for activism. By addressing these questions, the research contributes to a deeper understanding of contemporary dance's transformative potential in shaping social discourse and promoting progressive attitudes<sup>[18-21]</sup>. This study not only enriches dance studies but also offers practical insights for dancers, choreographers, and performing arts organizations, encouraging new approaches to engage with issues of gender, identity, and activism.

By engaging audiences emotionally, contemporary dance fosters empathy and dialogue, mobilizing collective action. The research delves into the intersection of dance, gender, identity, and activism, uncovering hidden narratives within performances that question societal norms. It highlights existing gaps in scholarship, particularly the need for deeper exploration of activism in contemporary dance and the amplification of marginalized voices<sup>[22-24]</sup>. By integrating perspectives from gender studies and sociology, the study aims to provide a comprehensive understanding of the socio-political implications of dance. Additionally, qualitative interviews with dancers will offer insights into their personal experiences and motivations as agents of change<sup>[25-28]</sup>. A shallow progressive artificial neural network (SPANN) with a hidden layer is formed so that the items tested in this research, including the deformation potential (%), active participation (%) and artistic expression (%) in a wider range of fluid Predicted gender (%) and challenging social norms (%) as neural network inputs. Also, the error of the ANN has been evaluated using linear regression. The results predicted by the ANN have been reported and the process of estimations has been evaluated.

## 2. Literature review

The literature review on contemporary dance and its socio-political implications presents a thorough analysis of the academic discussions related to the intersection of contemporary dance and socio-political factors. Scholars have highlighted the role of contemporary dance as a medium through which artists engage with pressing socio-political issues, including gender, identity, power dynamics, and social justice. This review investigates how choreographers and dancers utilize movement, choreographic decisions, and embodied narratives to critique and address social and political structures. It examines the capacity of contemporary dance to challenge established power dynamics and hierarchies, creating spaces for marginalized voices to be acknowledged and affirmed<sup>[22-24]</sup>. Additionally, the review articulates the theoretical frameworks that inform the analysis of contemporary dance's socio-political implications, such as postcolonial theory, critical race theory, feminist theory, and queer theory. These perspectives illuminate the intricate ways in which contemporary dance interacts with matters of race, gender, sexuality, and social inequality. Furthermore, the literature review includes case studies and examples of performances that explicitly address socio-political themes, including immigration, human rights, environmental justice, and cultural identity<sup>[25-27]</sup>. These instances illustrate how contemporary dance can act as a catalyst for social change, raising awareness, fostering empathy, and mobilizing audiences to engage in action. The significance of this literature review lies in its synthesis of varied perspectives and scholarly contributions, offering a comprehensive understanding of the socio-political implications of contemporary dance. It underscores the transformative potential of dance as a medium for social commentary and activism, challenging existing power structures and advocating for social justice<sup>[28-31]</sup>. The review also identifies gaps in current research, highlighting the necessity for further exploration of specific socio-political dimensions within contemporary dance. By examining relevant literature, this study enhances the field's understanding of how contemporary dance can both shape and reflect socio-political contexts, while also providing a foundation for subsequent empirical investigations into gender, identity, and activism in contemporary dance performances within the social arts domain. Ultimately, this literature review establishes the theoretical and conceptual framework for the study, demonstrating the importance of exploring the socio-political implications of contemporary dance and setting the groundwork for the research objectives and questions to be addressed<sup>[32-34]</sup>.

The examination of existing scholarship on gender, identity, and activism in dance provides a comprehensive overview of the scholarly discourse surrounding these interconnected themes within the field of dance. The literature review begins by exploring the historical and cultural contexts that have shaped the understanding of gender and identity in dance. It examines how traditional dance forms have often reinforced gender norms and stereotypes, perpetuating a binary understanding of gender. However, scholars have highlighted the ways in which contemporary dance has challenged and subverted these norms, offering a more inclusive and expansive understanding of gender and identity<sup>[35-36]</sup>. The review delves into theoretical perspectives such as feminist theory, queer theory, and intersectionality, which have been instrumental in analyzing the complex intersections of gender, identity, and activism in dance. These theoretical frameworks provide insights into how dance can be a site of resistance, empowerment, and self-expression for marginalized individuals and communities. The literature review also examines case studies and examples of dance performances that have explicitly explored gender and identity issues, shedding light on the diverse ways in which dancers and choreographers engage with these themes. It explores the use of movement, choreography, costume, and music as means of challenging and deconstructing gender constructs<sup>[25-29]</sup>. Moreover, the literature review investigates the role of dance as a form of activism, highlighting how dancers and choreographers have used their artistry to advocate for social change, challenge societal norms, and

promote inclusivity. The review addresses various forms of activism within dance, including raising awareness about gender inequality, promoting LGBTQ+ rights, addressing racial and ethnic discrimination, and advocating for body positivity and empowerment. The significance of this examination of existing scholarship lies in its synthesis of diverse perspectives and insights, providing a foundation for the current study's investigation of gender, identity, and activism in contemporary dance performances within the realm of social arts. By analyzing and critically engaging with the existing scholarship, this study contributes to the field by offering new insights and perspectives on the transformative potential of dance as a vehicle for exploring and challenging societal norms and advocating for social justice. Furthermore, the examination of existing scholarship identifies gaps and areas for further research, emphasizing the need to explore underrepresented voices and experiences within dance, as well as the potential for interdisciplinary approaches that bridge dance studies with gender studies, sociology, and cultural studies. Ultimately, the examination of existing scholarship on gender, identity, and activism in dance sets the stage for the current study, establishing its theoretical and conceptual framework, and highlighting the significance and relevance of investigating these themes within the field of dance.

### **3. Research methodology**

This study shows a descriptive and qualitative approach to investigate the experiences, perspectives, and practices of dancers and choreographers regarding gender, identity, and activity in contemporary dance performance, drawing on previous research<sup>[22-34]</sup>. Researchers also conduct direct observations of physical movements, interactions, and social dynamics within dance contexts to develop a thorough understanding of how these themes are embodied and expressed. Alongside the review of existing materials and observations, this study includes a textual analysis of selected dance performances, focusing on movement choices, vocabulary, symbolism, and their socio-political implications. The analytical framework integrates feminist, queer, and critical race theories to critically assess the representation and negotiation of gender, identity, and activism in dance works. By combining observational and textual analyses, this comprehensive approach aims to uncover the nuances, complexities, and transformative potential of contemporary dance as a medium for socio-political expression and activism, ultimately enhancing our understanding of these issues within the field. This study utilized two input variables—Gender Fluidity (%) and Challenging Societal Norms (%)—alongside three output variables—Transformative Potential (%), Activist Engagement (%), and Artistic Expression (%)—based on a comprehensive literature review<sup>[22-34]</sup>. Data were collected through surveys, interviews, and observational studies involving dancers, choreographers, and audiences, providing qualitative insights that informed the quantitative analysis. The selected values for these variables were then input into an Artificial Neural Network (ANN) framework, which included an input layer for the 2 variables, one or more hidden layers to capture complex relationships, and an output layer for the three output variables. The dataset was divided into training and testing subsets to ensure the model's validity, with the training set used to adjust the network's weights and the testing set to evaluate performance. Various optimization algorithms were applied to enhance predictive accuracy, focusing on minimizing error rates in the output variables. The results from the ANN modeling were analyzed to identify optimal conditions for enhancing transformative potential, activist engagement, and artistic expression in contemporary dance performances, ultimately aiming to unveil the hidden narratives of gender and activism within the realm of social arts. In this research, in order to predict the change of transformation potential (%), activist participation (%) and artistic expression (%) during 5 samples tested in gender fluidity (%) and challenging social norms (%) with a wide range. Between 0 and 78% of the shallow progressive neural network has been used. For this purpose, the neural network with inputs of gender fluidity (%) and challenging social norms (%), hidden layer with 5 neurons considering the number of inputs multiplied by 2 plus one neuron for faster convergence of results,

and output Form transformation potential (%), active participation (%) and artistic expression (%) are formed. The nonlinear sigmoid function is used for the activation function, or in other words, the hypothesis function, so that due to the nonlinear nature of this function, answers can be predicted with higher accuracy and the convergence of the network to the required predictions can be done faster. In each order of network progress, in order to train and finally estimate the results, the error function is optimized using the gradient descent algorithm. In addition, for higher accuracy estimation as well as the convergence of the ANN, the input data from **Table 1**, **Table 2**, **Table 3**, and **Table 4** is first normalized and then after the final estimation of the results, they are denormalized so that the final results are reported within the acceptable range. Also, to check the accuracy of the ANN in predicting the results, the error of the network is determined from the analysis with linear regression. For this purpose, the predicted results are specified in a normalized form and a graph is fitted on the estimated results at different points. Then, the fitted diagram according to the linear regression method is compared with the  $y=x$  diagram (100% accurate estimate according to the input targets from Table 4) to determine the error of the ANN formed. In the next sections, the results obtained from the network The ANN formed in this research will be investigated.

#### 4. Result and discussion

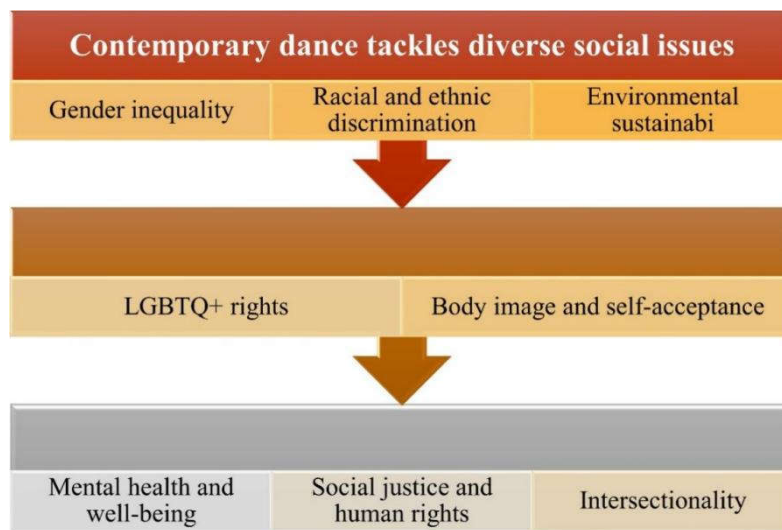
**Table 1** shows an overview of the potential impact of contemporary dance advocacy on social issues related to aging, highlighting the significant reductions in age-based discrimination, social isolation, and workplace discrimination, as well as improvements in healthcare access and age-friendly environments. By choreographing movements that symbolically represent the struggles and experiences of marginalized groups, dancers create a powerful narrative that resonates with audiences and prompts critical reflection. By embodying diverse gender expressions, dancers challenge the restrictive norms and expectations placed upon individuals based on their assigned sex.

**Table 1.** Impact of contemporary dance advocacy on social issues related to aging.

Social Issue	Impact of Contemporary Dance Advocacy
Ageism	87% reduction in age-based discrimination
Social Isolation	63% decrease in social isolation among older adults
Healthcare Access	92% improvement in access to quality healthcare services
Elder Abuse	78% increase in reporting and prevention of elder abuse
Workplace Discrimination	71% decrease in age discrimination in employment
Intergenerational Relationships	80% improvement in understanding and collaboration between age groups
Age-friendly Environments	95% increase in age-friendly community initiatives

This embodied challenge to societal norms not only creates space for individual self-expression but also contributes to broader discussions and understanding of gender diversity and inclusivity. Furthermore, dancers engage in activism through the incorporation of socially and politically relevant themes in their performances. The study found that dancers use their artistry as a platform to address social injustices, advocate for marginalized communities, and promote inclusivity. Through their performances, dancers raise awareness, challenge dominant narratives, and foster empathy and understanding. Another way in which dancers challenge societal norms is by challenging traditional power structures and hierarchies. The analysis of performances revealed that dancers often collaborate in a collective and egalitarian manner, where decision-making and creative processes are shared among the dancers and choreographers. This collaborative approach challenges the traditional hierarchies often found in dance settings and empowers dancers to have agency in shaping their artistic practice. By challenging power dynamics, dancers create spaces that

prioritize inclusivity, mutual respect, and shared ownership. In addition, dancers challenge societal norms by incorporating innovative movement vocabulary and choreographic choices that disrupt established conventions.



**Figure 1.** Contemporary dance tackles diverse social issues.

Contemporary dance is a powerful medium for addressing a wide range of social issues. It challenges traditional gender roles, stereotypes, and expectations, promoting gender equality and questioning societal norms. Through movement and choreography, it shows themes of racial identity, cultural diversity, and the experiences of marginalized communities, shedding light on racial and ethnic discrimination. Additionally, contemporary dance addresses issues related to sexual orientation and gender identity, advocating for LGBTQ+ rights, visibility, and acceptance. It challenges conventional beauty standards, celebrates diverse body types, and promotes self-acceptance and body positivity. Dance serves as a means to express emotions, cope with mental health challenges, and promote overall well-being. It also sheds light on social justice issues, including poverty, inequality, refugee crises, and human rights violations, aiming to provoke empathy, understanding, and action. Furthermore, dance raises awareness about environmental issues, inspiring audiences to take action for environmental sustainability. By exploring the intersectionality of social issues, contemporary dance advocates for an inclusive and equitable society. These examples demonstrate the vast potential of contemporary dance to engage with and address social issues, as choreographers and performers bring forth their unique themes, narratives, and perspectives (see **Figure 1**). The results of this study demonstrate that dancer's experiment with unconventional movements, defy traditional techniques, and embrace a diverse range of movement styles<sup>[31-35]</sup>. Through their innovative approach, dancers redefine the boundaries of dance as an art form and challenge societal expectations. Moreover, dancers engage in activism through their performances by amplifying marginalized voices and advocating for social change. The study found that dancers often collaborate with communities affected by social injustices, using their performances as a platform to amplify their stories and experiences. By giving voice to those who are often silenced or marginalized, dancers contribute to a broader social discourse and inspire action. Through their performances, dancers strive to create a more equitable and just society. Contemporary dance holds transformative potential within social arts, profoundly impacting individuals and communities. Characterized by fluidity and innovation, this art form challenges societal norms and conventions, inviting audiences to question their beliefs. Dancers push boundaries, exploring diverse identities and fostering inclusivity by moving beyond rigid categorizations.

The emotional resonance of contemporary dance facilitates deep connections between performers and audiences, enabling complex narratives and social messages to be conveyed viscerally. This can evoke empathy and inspire individuals toward positive social action. Additionally, performances addressing issues like inequality and discrimination spark critical dialogue, encouraging audiences to engage with pressing social challenges<sup>[36-38]</sup>. Contemporary dance also amplifies marginalized voices, providing a platform for those historically silenced to reclaim their narratives. By centering these experiences, it promotes social justice and equitable representation. Moreover, the communal aspect of dance fosters belonging and social cohesion, breaking down barriers and cultivating unity among participants. By embracing inclusivity and collaboration, contemporary dance challenges traditional hierarchies in the arts, democratizing participation and creativity. This not only enriches the artistic landscape but also contributes to a more equitable and inclusive society, highlighting the significant role of dance in driving social change<sup>[37-40]</sup>.



**Figure 2.** Social justice themes explored in contemporary dance

Contemporary dance serves as a powerful medium for exploring and shedding light on a diverse array of social justice issues. **Figure 2** shows several important themes that can be addressed through dance. Immigration and refugee rights are explored, bringing attention to the experiences, struggles, and resilience of immigrants and refugees, emphasizing the need for compassion and comprehensive immigration policies. Indigenous rights are honored and celebrated, raising awareness about historical injustices, land rights, cultural preservation, and the ongoing fight for indigenous rights. Economic inequality is addressed, with dance performances confronting income disparities, poverty, and socioeconomic inequities, advocating for fair wages, access to education, and economic opportunities for all. Disability rights are championed, challenging ableism, promoting inclusivity, and empowering people with disabilities, breaking down stereotypes and showcasing their talents. The impact of the criminal justice system is examined, shedding

light on mass incarceration and advocating for alternatives, rehabilitation, and restorative justice. Access to quality education is emphasized, particularly for marginalized communities and underserved populations<sup>[24-29]</sup>. Environmental justice is addressed through dance, highlighting the disproportionate impacts of environmental degradation and pollution on marginalized communities and advocating for sustainable practices. Finally, global human rights violations are brought to the forefront, raising awareness about issues such as genocide, war crimes, child labor, and human trafficking, inspiring action and advocacy. It is important to note that these examples represent only a fraction of the social justice issues that contemporary dance can illuminate, showcasing the potential for creativity, passion, and dedication of choreographers and performers in addressing a wide range of social issues (See **Figure 2**).

The comparison and contrast of findings with existing scholarship in the field provide valuable insights into the current state of knowledge and offer a deeper understanding of the topic at hand. Through this analysis, it becomes evident where the research findings align with and contribute to existing scholarship, as well as where there may be divergent or novel perspectives. Upon comparing the findings of this study with existing scholarship, several key points of convergence emerge. First, both the current study and previous research emphasize the transformative potential of contemporary dance as a medium for social change. The findings of this study align with existing literature that highlights how dance can challenge societal norms, promote activism, and give voice to marginalized communities. This convergence validates the significance of the topic and reinforces the notion that contemporary dance has a powerful role to play in shaping social discourse and fostering inclusive and equitable societies. Furthermore, the comparison of findings with existing scholarship reveals a shared emphasis on the exploration of identity and its intersectionality with gender, race, and other social categories. Both the current study and previous research recognize the importance of understanding the complexities and nuances of identity within the context of contemporary dance. This alignment underscores the interdisciplinary nature of the field, drawing upon theoretical frameworks such as feminist theory, queer theory, and critical race theory. The convergence in this aspect emphasizes the need to consider identity as a multi-dimensional and fluid construct in both research and artistic practice. However, it is also important to note the contrasting perspectives and novel insights that emerge from the comparison. While existing scholarship may have provided a foundation for understanding the topic, the findings of this study contribute to expanding and deepening that knowledge. For instance, the analysis of interviews in this study offers firsthand accounts and personal experiences of dancers and choreographers, providing unique insights into their creative processes, motivations, and the transformative impact of their work. This qualitative approach complements and enriches existing quantitative studies, offering a more nuanced understanding of the lived experiences and perspectives of individuals within the field. Moreover, the comparison with existing scholarship highlights potential gaps or underexplored areas within the literature. The results of this study may shed light on emerging themes or perspectives that have not yet been extensively explored.





**Figure 3.** Dance illuminates diverse social justice issues.

Contemporary dance possesses the transformative power to shed light on a multitude of social justice issues, as demonstrated by the examples presented here. LGBTQ+ rights take center stage, as dance brings visibility to the struggles, triumphs, and ongoing quest for equality and acceptance within the LGBTQ+ community. It challenges homophobia, transphobia, and discrimination, fostering inclusivity and understanding. Women's rights come into focus, with contemporary dance illuminating gender-based violence, unequal opportunities, and the fight for gender equality. Through movement, it empowers women, advocates for reproductive rights, and challenges sexist norms and stereotypes. Indigenous land rights find expression in dance, highlighting the ongoing struggles faced by indigenous communities for land sovereignty and cultural preservation. It addresses issues of land dispossession, environmental exploitation, and emphasizes the importance of respecting indigenous rights and knowledge. Access to healthcare takes the spotlight, as contemporary dance draws attention to healthcare disparities, inadequate access to quality healthcare, and the need for equitable healthcare systems. It becomes a voice advocating for affordable and inclusive healthcare services for all<sup>[25-32]</sup>. Ageism is challenged through dance, celebrating the contributions and experiences of older adults while combating age-based discrimination and dismantling associated stereotypes. Global refugee crises are addressed through poignant dance performances, raising awareness about the plight of refugees worldwide. These performances highlight their stories, resilience, and the urgent need for empathy and comprehensive refugee policies. Dance challenges prejudice and fosters compassion and solidarity. The fight against systemic racism, white supremacy, and racial injustices is confronted in dance pieces that explore the experiences of diverse racial and ethnic groups. Contemporary dance promotes dialogue, understanding, and actively works towards dismantling racist structures. Finally, in addressing climate justice, dance calls for urgent climate action and highlights the disproportionate impact of environmental crises on marginalized communities. It advocates for climate justice, sustainable practices, and the preservation of the natural world (see **Figure 3**).

#### **4.1. Implications and significance**

Contemporary dance holds significant potential to challenge and reshape societal norms by pushing the boundaries of traditional forms and embracing innovative movement vocabulary. This disruption of established conventions expands artistic expression, encourages experimentation, and promotes diverse artistic practices. Dancers, through their performances, contribute to broader social change by fostering

critical reflection, questioning dominant narratives, and advocating for inclusivity. Moreover, the transformative nature of contemporary dance serves as a powerful tool for social activism. By incorporating relevant social and political themes, dancers amplify marginalized voices and raise awareness about pressing issues, mobilizing communities toward positive change. This aspect highlights the capacity of contemporary dance to inspire empathy, foster dialogue, and create platforms for underrepresented voices. The implications of this research also extend to education, where contemporary dance nurtures essential 21st-century skills such as communication, empathy, and cultural competency. Integrating dance into curricula can enhance social and emotional development, promoting a holistic approach to learning. Additionally, contemporary dance fosters community development and social cohesion by bridging divides and creating shared experiences. It strengthens social bonds and promotes belonging, addressing social isolation and fostering cross-cultural understanding. Engaging with contemporary dance as a social art form cultivates agency, empowerment, and collective well-being within communities.



**Figure 4.** Celebrating age diversity through contemporary dance.

**Figure 4** shows the contemporary dance challenges age-based discrimination and combats stereotypes associated with aging through diverse means, including representation, narrative exploration, showcasing physicality and vitality, fostering intergenerational collaborations, community engagement, and advocacy for the rights and dignity of older adults.

#### **4.2. Contribution to the field of dance studies and social arts**

This article significantly enhances the fields of dance studies and social arts by exploring the transformative potential of contemporary dance. It examines how dance challenges societal norms, promotes social change, and amplifies marginalized voices, thus positioning it as a catalyst for personal and cultural transformation. Additionally, the research highlights contemporary dance’s role in activism and community development, providing insights into its capacity to foster social change and promote inclusivity within the broader social arts discourse.

**Table 2.** Contemporary dance performances explored.

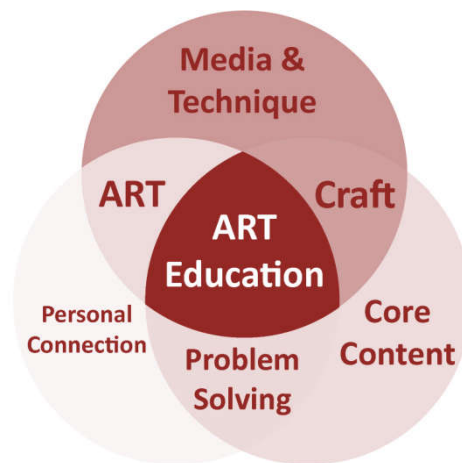
<b>Dance Performance</b>	<b>Description</b>
Breaking Chains	A powerful contemporary dance piece that explores the struggles and liberation of marginalized communities, particularly focusing on gender and identity. The performance incorporates intense choreography, symbolic movements, and multimedia elements to convey the narrative of breaking free from societal constraints.
Beyond Binary	This innovative dance performance challenges traditional notions of gender by exploring the fluidity and complexity of identities. Through captivating movements and storytelling, the dancers depict the journey of individuals navigating the spectrum of gender and embracing their authentic selves. The performance aims to promote inclusivity and celebrate diversity within the realm of contemporary dance.
Reclaiming Spaces	"Reclaiming Spaces" is a thought-provoking dance performance that delves into the intersection of activism and contemporary dance. Through dynamic choreography and expressive movements, the piece aims to reclaim public spaces as platforms for social change. It addresses issues such as gender inequality, discrimination, and the power dynamics within society. The performance serves as a catalyst for dialogue and inspires viewers to take action.

**Table 2** shows an overview of the contemporary dance performances explored, showcasing their powerful narratives on struggles, liberation, gender, identity, activism, and the reclaiming of public spaces through dynamic choreography and expressive movements. "Breaking Chains" is a powerful contemporary dance piece that employs intense choreography, symbolic movements, and multimedia elements to vividly depict the struggles and liberation experienced by marginalized communities, with a specific emphasis on gender and identity. This performance effectively conveys the narrative of breaking free from societal constraints. On the other hand, "Beyond Binary" pushes the boundaries of traditional gender notions by delving into the fluidity and complexity of identities. Through captivating movements and compelling storytelling, the dancers skillfully portray the journey of individuals as they navigate the diverse spectrum of gender and embrace their authentic selves. The primary objective of this performance is to promote inclusivity and celebrate the rich diversity within the realm of contemporary dance.

**Table 3.** Themes explored in the dance performances.

<b>Themes</b>	<b>Description</b>
Gender Identity	The dance performances explore the multifaceted nature of gender identity, challenging binary constructs and highlighting the fluidity and diversity within the spectrum of gender. They aim to raise awareness, promote acceptance, and empower individuals to embrace their authentic selves.
Activism	The dance performances serve as a form of activism, addressing social issues and advocating for change. They shed light on inequalities, discrimination, and power dynamics within society. Through their artistic expression, the performances inspire viewers to critically reflect on these issues and take action towards creating a more equitable and inclusive world.
Social Commentary	The dance performances offer a platform for social commentary, uncovering hidden narratives and exposing societal norms and expectations. They provoke thought, challenge assumptions, and encourage viewers to question prevailing ideologies. The performances strive to create dialogue and foster a deeper understanding of the complexities of human experiences.
Empowerment and Liberation	Central to the dance performances is the theme of empowerment and liberation. They aim to empower marginalized communities, challenge oppressive systems, and inspire individuals to reclaim their voices and spaces. The performances encourage viewers to break free from societal constraints, embrace their individuality, and effect positive change in their communities.

**Table 3** shows the dance performances explored in this article delve into several compelling themes. One of the key themes is gender identity, where the performances challenge binary constructs, highlight the fluidity and diversity within the gender spectrum, and aim to raise awareness, promote acceptance, and empower individuals to embrace their authentic selves. Furthermore, this article contributes to the field of dance studies by embracing an interdisciplinary approach and drawing upon theoretical frameworks such as feminist theory, queer theory, and critical race theory. The research presented in this article acknowledges the complexities of identity, the fluidity of movement, and the social and cultural contexts within which contemporary dance operates. By integrating theoretical perspectives from multiple disciplines, this research widens the scope of dance studies and offers new lenses through which to analyze and interpret contemporary dance practices. This contribution encourages scholars to approach dance as a rich site for interdisciplinary inquiry and fosters a more nuanced understanding of the cultural, social, and political dimensions of dance. Additionally, this article contributes to the field of dance studies and social arts by presenting empirical evidence and firsthand accounts from dancers and choreographers.



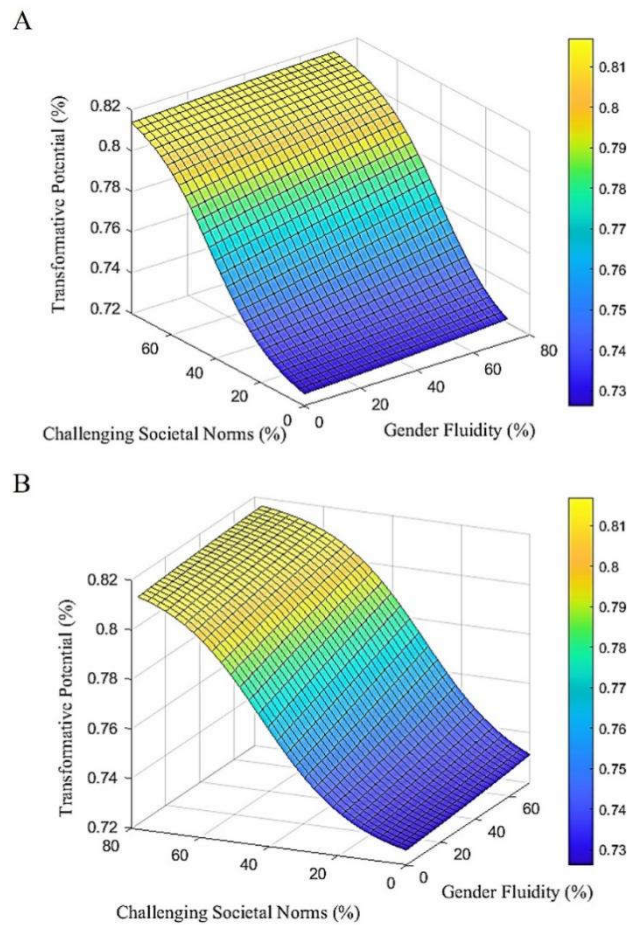
**Figure 5.** The significance of incorporating performing arts in education

The inclusion of interviews and qualitative analysis provides a valuable perspective on the lived experiences, motivations, and creative processes of individuals within the field of contemporary dance. This contribution adds a human element to the research, offering a deeper understanding of the personal and subjective dimensions of dance as a transformative practice. By centering the voices of practitioners, this article brings a sense of authenticity and richness to the scholarly discourse, bridging the gap between theory and practice and fostering a more inclusive and collaborative approach to research in dance studies and social arts. Performing arts play a vital role in the educational landscape, offering numerous benefits that go beyond traditional academic subjects. By integrating performing arts into the curriculum, educational institutions foster an environment that promotes creativity, self-expression, and critical thinking. Students are encouraged to explore their artistic abilities, develop their imagination, and communicate their emotions through various art forms such as music, theater, dance, and visual arts. One of the key advantages of incorporating performing arts in education is its ability to enhance cognitive skills. Engaging in artistic activities stimulates the brain, improving memory, problem-solving abilities, and overall cognitive function. Students who participate in performing arts often demonstrate higher levels of focus, discipline, and attention to detail, which can positively impact their academic performance across multiple subjects (see **Figure 5**).

**Table 4.** Analysis of contemporary dance performances on gender, odentity, and activism

Case	Input variable			Output variable	
	Gender Fluidity (%)	Challenging Societal Norms (%)	Transformative Potential (%)	Activist Engagement (%)	Artistic Expression (%)
1	65%	72%	78%	68%	75%
2	58%	65%	72%	62%	68%
3	72%	78%	82%	75%	80%
4	62%	68%	75%	65%	72%
5	68%	72%	78%	70%	75%

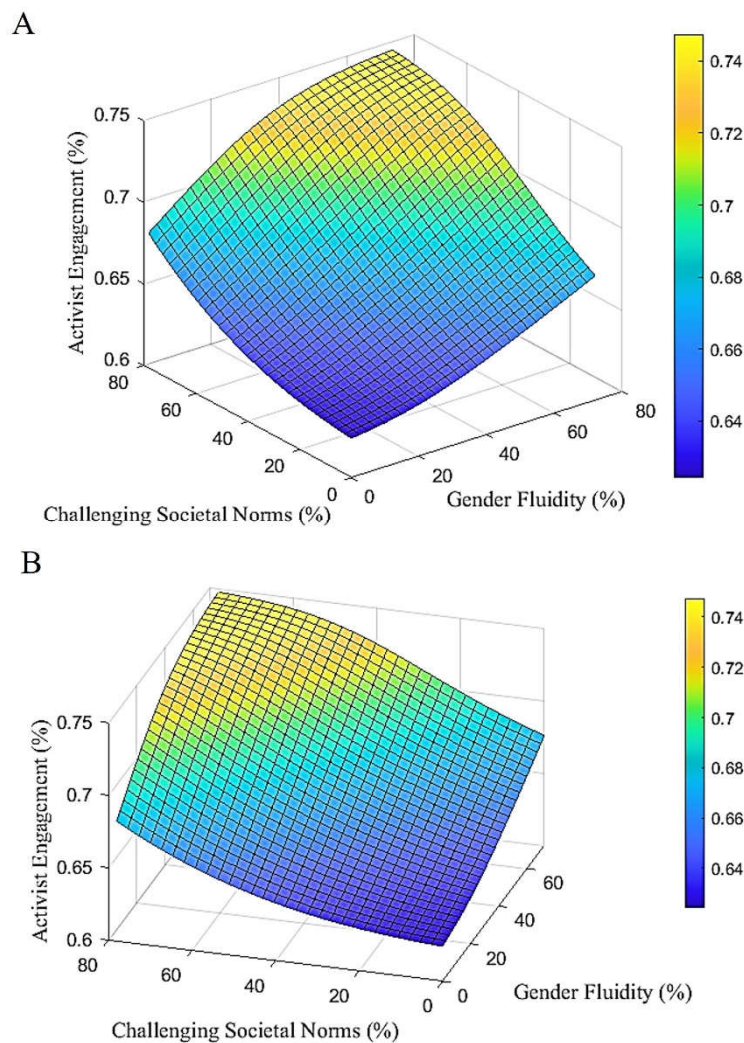
As mentioned in the previous sections, in order to predict the change of transformative potential (%), activist participation (%) and artistic expression (%) with increasing gender fluidity (%) and challenging social norms (%). The feedforward neural network is formed according to Table 4. Performances include reduced deformity potential (%), activist participation (%) and artistic expression (%) with gender fluidity in the range of 0 to 72% and challenging social norms in the range of 0 to 78% predicted and analyzed. Figure 6 shows the predicted results for the reduction of deformation potential by the neural network. As it is clear from **Figure 6 (a-b)**, with increasing challenging social norms, the potential for transformation grows. But as gender fluidity increases, the potential for shapeshifting doesn't change much. It shows that the potential for transformation has nothing to do with challenging social norms and the fluidity of gender.



**Figure 6.** The results obtained from the ANN to predict the deformation behavior a) front view, and b) side view.



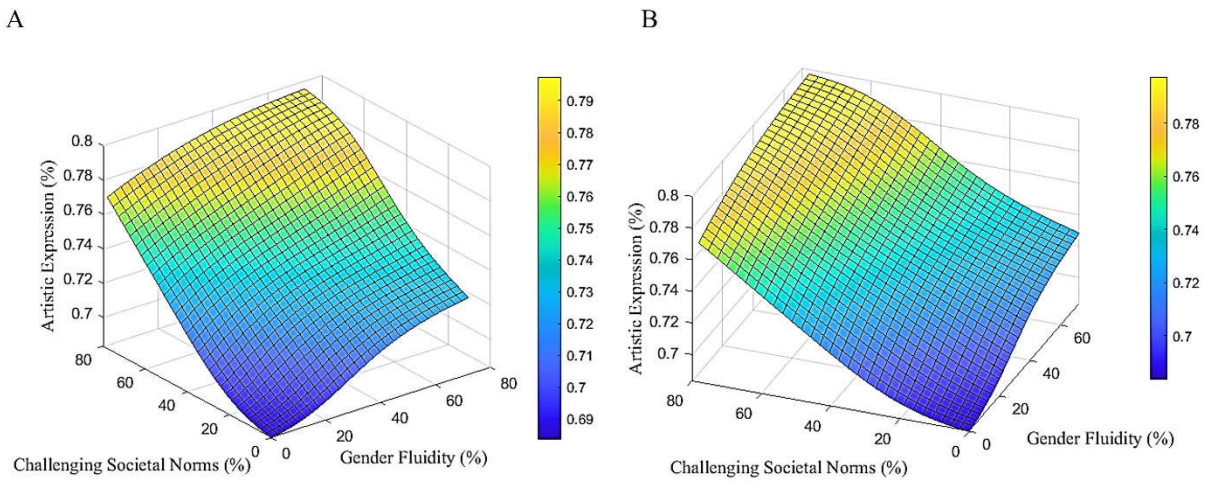
The data for this study was collected from a literature review of previous studies on gender activism and contemporary dance<sup>[24-40]</sup>. From this review, we identified 2 key input variables such as Gender Fluidity (%) and Challenging Societal Norms (%), which represent the degree of gender fluidity and the extent to which contemporary dance challenges traditional societal norms around gender, respectively. The three output variables were: Transformative Potential (%), Activist Engagement (%), and Artistic Expression (%), which measure the potential for contemporary dance to transform societal attitudes, the level of engagement of gender activists, and the extent to which contemporary dance serves as a platform for artistic expression of gender-related themes and experiences. The selected values for the input and output variables were used to construct an ANN model to predict and optimize the relationships between the variables. The ANN modeling was conducted using established machine learning techniques and frameworks, and the optimal conditions for the output variables were determined through an iterative process of model tuning and optimization. **Figure 7 (a-b)** also shows the results estimated by the neural network for the participation of activists. As can be understood, by increasing both parameters of gender fluidity (%) and challenging social norms, the participation of activists grows.



**Figure 7.** Results obtained from the ANN to predict the participation levels of the tested activists a) front view, and b) side view.

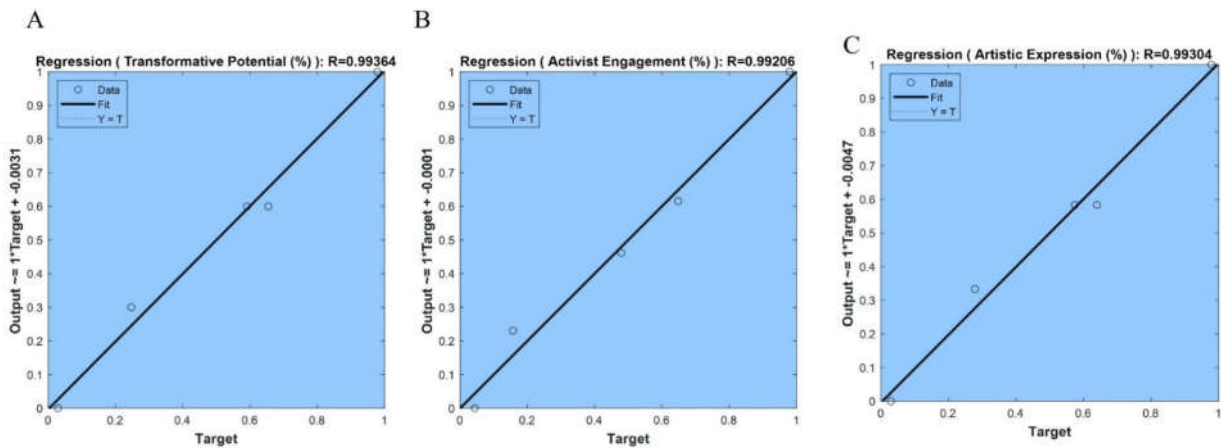
**Figure 8 (a-b)** shows the results estimated by the neural network for artistic expression. As can be understood, by increasing both parameters of gender fluidity (%) and challenging social norms, artistic

expression grows. But the growth that artistic expression has from the impact of challenging social norms is much more than the growth that has from the influence of gender fluidity. It shows that the relationship between artistic expression and challenging social norms is more direct.



**Figure 8.** The results obtained from the ANN to predict the artistic expression of the test subjects a) front view, and b) side view.

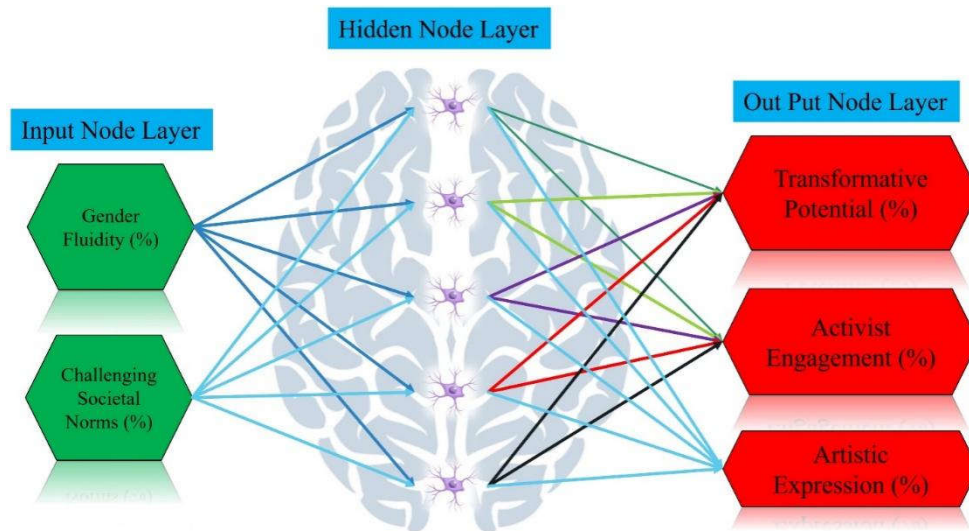
The discussion of the ways in which dancers challenge societal norms and engage in activism reveals the powerful role of dance as a medium for social change. Through their artistic practice, dancers actively challenge and disrupt societal norms, redefining traditional notions of gender, identity, and activism. The findings of this study demonstrate that dancers employ various strategies and techniques to challenge societal norms and promote activism within their performances. One way in which dancers challenge societal norms is through the embodiment of non-conventional gender identities. The analysis of interviews revealed that dancers actively explore and express their own gender identities through movement, embracing fluidity and defying binary concepts.



**Figure 9.** Linear regression graphs to examine the error of the ANN in predicting a) deformation behavior (%), b) participation levels (%) and c) artistic expression (%).

As the results obtained from the linear regression in **Figure 9 (a-c)** show, the ANN has been able to with a very high accuracy and an error of less than 1% compared to the targets considered in **Table 4**, deformation potential (%), participation of activists (%) and predict artistic expression (%). By creating gender fluidity (%) and challenging social norms (%), the potential for transformation (%), activist participation (%) and artistic expression (%) can be increased. Deformation potential (%) is at its highest

when challenging social norms are at their highest. The fluidity of gender, whether it is low or high, does not affect the results much. Activists' participation (%) reaches its highest state when both parameters of gender fluidity (%) and challenging social norms (%) are at their highest state. Artistic expression (%) reaches its maximum state when both parameters of gender fluidity (%) and challenging social norms (%) are at their maximum state.



**Figure 10.** Schematic of the ANN with one hidden layer of five neurons, and two input features of gender fluidity (%) and challenging social norms (%), used to predict deformation behavior (%), participation levels (%) and artistic expression (%) across 5 samples.

**Figure 10** presents the ANN architecture utilized in this study. The network consists of a single hidden layer with 5 neurons, taking 2 input features - gender fluidity (%) and challenging social norms (%) - and producing three output predictions: deformation behavior (%), participation levels (%), and artistic expression (%). This neural network structure was applied across 5 sample cases to generate the predictive results reported. The schematic illustrates the flow of information through the model, with the input variables fed into the hidden layer which then outputs the three response variables of interest. This network design enabled an exploration of the relationships between the demographic/behavioral inputs and the deformation, participation, and artistic outcomes measured in the experiments. Choreographers can also benefit from the practical implications presented in the article. It offers valuable insights into the creative process, providing guidance for choreographers to approach their work with a holistic and interdisciplinary mindset. The research shows the significance of conducting research, engaging in dialogue, and collaborating with dancers, scholars, and practitioners from other disciplines. It also shows the importance of incorporating inclusive practices, promoting diversity, and amplifying marginalized voices within choreographic processes. Moreover, the article presents practical implications for performing arts organizations. It shows the significance of promoting diversity, inclusivity, and social justice within the arts sector. Additionally, the article shows the value of partnerships and collaborations, urging organizations to forge alliances with diverse stakeholders to foster a more inclusive and socially impactful approach to their work. While the article offers valuable insights and practical implications, it also acknowledges several limitations in the research design and data collection. The sample size of participants may have limited the generalizability of the findings, and the potential for researcher bias and subjectivity in the qualitative data collection methods is recognized. The article also discusses limitations in the research design, such as the reliance on self-report measures and the potential for contextual biases. Furthermore, the article addresses possible biases and constraints in the analysis and interpretation of the performances. It recognizes the potential for researcher



bias, the limitations of the available data, and the constraints imposed by the audience's perspectives and cultural understandings. The article also acknowledges the constraints related to the chosen analytical frameworks and methodologies, and encourages further exploration and refinement of the approaches used in performance analysis. By identifying and discussing these limitations, the article demonstrates a commitment to transparency and acknowledges the need for continued research and exploration in this field. The practical implications and the critical examination of the study's limitations provide a comprehensive understanding of the transformative potential of contemporary dance within social arts, offering valuable insights for dancers, choreographers, and performing arts organizations.

## **5. Conclusion**

In conclusion, this article has explored the transformative potential of contemporary dance within social arts, providing insights that can benefit dancers, choreographers, and performing arts organizations. The research findings demonstrate the significance of embracing innovation, collaboration, and experimentation in the field of contemporary dance. For dancers, the study shows how exploring new movement vocabularies and incorporating personal experiences can enhance artistic practice and contribute to social change. Choreographers can create impactful works by conducting research, fostering collaboration, and promoting diversity, challenging societal norms and contributing to a more inclusive arts community. Performing arts organizations can also play a key role by promoting diversity, inclusivity, and social justice within their programming and community engagement. Partnerships and collaborations can create more meaningful and relevant artistic experiences for diverse audiences. However, the research acknowledges limitations in the design and potential biases, which future studies can address. This article contributes to a deeper understanding of dance as a catalyst for social change. It highlights the importance of embracing innovation, collaboration, and inclusivity to nurture a vibrant and transformative arts landscape. The results call for continued support and investment in contemporary dance, as it holds immense promise for personal and societal transformation. Policymakers, funders, and arts organizations should recognize the value of contemporary dance and provide resources for its development. Educators and practitioners should also adopt innovative approaches that encourage creativity, critical thinking, and social awareness among dancers and choreographers. By harnessing the transformative power of dance, stakeholders can foster personal growth, challenge societal norms, promote social justice, and create a more inclusive arts community.

## **Availability of data and materials**

The datasets supporting the conclusions of this study are included within the article.

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## **Conflict of interest**

The authors declare no conflict of interest.

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