# Experiences of Student Circus Arts Performers Undertaking a Shoulder Rehabilitation Program Via Telehealth Consultation During the COVID-19 Pandemic

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**OBJECTIVE:** To explore the subjective experiences of student circus arts performers with atraumatic shoulder instability undertaking a 12-week shoulder rehabilitation program during the COVID-19 pandemic lockdown, in Melbourne, Australia. **METHODS:** Using a qualitative design, 14 circus arts students from the National Institute of Circus Arts (Australia) were individually interviewed via teleconsultation. All interviews were recorded, transcribed, and analysed using inductive thematic analysis. **RESULTS:** Five overarching themes were identified: (i) impact (physical and mental), (ii) opportunity, (iii) developing routine, (iv) client-therapist relationship, and (v) transformation. All participants reported positive physical changes to their shoulder including increases in strength, stability, range of motion, less pain, "clicking" and "clunking," improved posture, muscle memory, as well as carry-over to functional circus activities. The pandemic's mental impact varied across the cohort, with positive and negative experiences described in relation to cognitive, social, and affective factors. Most performers felt the pandemic provided an opportunity to focus on rehabilitation of their shoulder. The program effects were also underpinned by positive client-therapist relationships and a progressive transformation of learning where students gained knowledge of their condition, developed tools to manage their current shoulder impairment, and learned how to apply this new knowledge to future management of their condition. **CONCLUSION:** A shoulder exercise intervention delivered via teleconsultation during the COVID-19 pandemic resulted in subjective reports of positive physical changes to the participants' shoulder health complaint. This was facilitated through client-physiotherapist relationships, providing structure during uncertain times, and by providing education to help in understanding their condition and its future management. *Med Probl Perform Art* 2021;36(3):163–175

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**THE CORONAVIRUS** pandemic (COVID-19) has brought about significant change to athletes, with the postponement and cancellation of competitions and performances.[1] Athletes have reported more sedentary behaviour, reduced motivation, poorer nutritional choices increased physical health concerns (e.g., reduced cardiorespiratory fitness and strength, worsening of body composition) and poorer mental health.[1,2]

Due to the potential impact of the pandemic on athlete health, published recommendations suggest athletes be encouraged to reset their mindset by using the time as an opportunity for personal development.[3] Such strategies may include implementation of preventative behaviours (e.g., hygiene, health promotion), personalised conditioning, body composition control, and a focus on personal development.[3] In pre-pandemic times, engaging in injury rehabilitation between training and competition/performance may be difficult, and associated with significant time pressure to attain pre-injury status.[4] Whereas during the pandemic, potential interruptions to these schedules may provide an opportunity to rehabilitate (e.g., more time to recover while performances are cancelled). Despite this, the pandemic may limit access to rehabilitation services and equipment, and the reduced participation in training and competition may reduce an individual's motivation to engage in rehabilitation, and further worsen their health status. Though there are specific recommendations on home-based training during the COVID-19 pandemic,[5,6] to the authors' knowledge, there are no qualitative studies that have examined the subjective experience of individuals undertaking structured injury rehabilitation during the pandemic.

This study explores the subjective experiences of circus art students during the pandemic while undertaking an exercise intervention for atraumatic shoulder instability. Circus performance places high demands on the shoulder with a high reported prevalence of shoulder injuries[7,8]—27.7% at the University of Arts in the Netherlands[7] and 12% at the National Institute of Circus Arts (NICA) in Australia.[9] Of these shoulder injury presentations, atraumatic shoulder instability was anecdotally reported by the performance medicine department at NICA as a difficult condition to manage in the circus environment due to the large amount of shoulder range of motion involved in circus skill performance. The condition involves abnormal mechanics of the shoulder due to underlying joint capsular laxity that can lead to symptomatic instability, in one or more directions, causing pain, subluxation, dislocation or functional impairment, without history of significant trauma.[10–12]

The principal form of management for shoulder instability presentations is exercise, first described by Burkhead and Rockwood,[13] and later by Watson[14] and Derby Protocols.[15] The Watson Protocol (WIP1) was found to result in greater improvements in the Western Ontario Shoulder Index and Melbourne Instability Shoulder Score when compared to the Rockwood Protocol in a randomised controlled trial.[14] Results from this trial were objectively quantified through patient-reported outcome measures (PROMs), so it is unknown if (i) the benefits of the WIP1 extend beyond change to objective measures and (ii) if the WIP1 could be delivered fully online during the pandemic. Thus, the primary aim of this study was to explore the subjective experiences of student circus arts performers undertaking a shoulder rehabilitation program via telehealth during the pandemic.

## METHODS

### Design

A qualitative interpretive approach using semi-structured interviews was undertaken to explore the subjective experiences of student circus artists completing a 12-week shoulder rehabilitation program during the pandemic. Ethics approval for this study was granted by Swinburne University of Technology (reference 20202674-3529). All participants were provided detailed information about the study, gave written signed consent prior to data collection, and approved the use of de-identified data in research.

### Recruitment and Eligibility

Participants were recruited from a concurrent longitudinal prospective cohort study with quasi-experimental design that quantitatively investigated the effect of an exercise rehabilitation program on pain, strength and function in circus arts performers with atraumatic instability of the shoulder (ACTRN 12620000335998). Of 24 eligible participants, 14 agreed to participate in this qualitative evaluation.

For inclusion, participants must have been enrolled as a circus arts student at NICA; have shoulder region discomfort, pain, apprehension or guarding with movement; and have a clinical diagnosis of atraumatic shoulder instability in one or more directions that was amenable to correction (improvement in abduction range of motion by a minimum of 20°, a reduction in pain or guarding during shoulder abduction, or improvement in strength on an isometric test).[16,17] Physical assessment of participants was completed, and diagnosis confirmed, by expert shoulder physiotherapist assessors prior to the government-enforced COVID-19 Melbourne city lockdown. Participants who had shoulder symptoms that were not deemed attributable to atraumatic glenohumeral joint instability were excluded.

### Context

NICA is Australia's Centre of Excellence in contemporary circus arts training, offering Certificate IV and Bachelor of Circus Arts courses accredited by Swinburne University of Technology. It is highly competitive, world-renowned, and is the only institute in the southern hemisphere to offer a degree in circus arts. Students complete an average of 22 and 32 hours of physical training per week for Certificate IV and Bachelor of Circus Arts courses, respectively. The exercise intervention described in this study was completed for a 12-week period (March to June 2020) during the first COVID-19-related lock-down in Melbourne, Australia. During this period, students were not able to leave home except when attending essential activities (e.g., medical appointments, shopping), or exercising (limited to a 5-km radius, 1-hour per day). Consequently, students were unable to attend the NICA campus for circus training.
Participants completed a previously published shoulder rehabilitation at home using portable exercise equipment (elastic exercise bands and dumbbells).[16,18] The 12-week exercise program was re-assessed and progressed by a physiotherapist over a once-weekly telehealth consultation. An exercise diary was used to monitor adherence to the program. The participants were encouraged to contact their treating study physiotherapist if they had any queries between scheduled telehealth appointments.

### Data Collections and Analysis

A semi-structured interview was completed with each participant via teleconsultation. This interview was conducted within 1-week of completing a 12-week WIP1 program. An interview guide was developed by the research team that included experienced qualitative researchers (SB, SK); the interview guide included core questions and possible follow up prompts (Appendix 1). All interviews were conducted by the same member of the research team (AR), a female physiotherapist, unfamiliar to participants. The interviews were videotaped, transcribed verbatim and de-identified with each participant allocated a random participant number. For member checking, a copy of the tran-

**TABLE 1.** Example of Movement from Transcript to Theme

| Transcript Excerpt | Codes | Subtheme | Theme |
|---|---|---|---|
| *"I knew what it felt like when it was 'solid' which also meant that I knew what it felt like when it wasn't solid and could adjust my training accordingly rather than push through the pain or instability as I potentially would have done in the past."* (P1) | Learning through feedback<br>Understanding<br>Altered response to shoulder impairment | Application of new knowledge | Transformation |

script was emailed to respective participants and they were given an opportunity to amend or add to the interview information using track changes.[19] Four of the 14 participants amended their transcript by adding additional information to their question responses.

Inductive thematic analysis was completed, informed by the processes described by Braun and Clarke.[20] Two of the research team (CG, AR) independently analysed the entire data set. Analysis began by listening to the audio files in conjunction with reading and re-reading of transcripts, noting down initial reflections. Codes were then applied to words, phrases or sentences that seemed meaningful to the participants. Both researchers grouped similar and/or recurring codes to generate broad themes and subthemes and met once they had completed coding and early theme generation in order to further refine themes and subthemes. A third member of the research team (SB) analysed a sample of the dataset (4 transcripts), prodded at assumptions, offered alternative perspectives, aided the development of themes and subthemes, and confirmed analysis was grounded in the data and was reflective of the participants' experiences. Four members of the team (CG, AR, SB, SK) met regularly to discuss the emerging interpretations and relationships of themes and to ensure they described participant cohort experiences and were supported by appropriate exemplars. Table 1 demonstrates movement from transcript to codes, subthemes and themes. A summary of themes and subthemes identified by the researchers were sent to participants and each was given an opportunity to provide further comment,[19] though none were received in response.

## RESULTS

Nine female and five male students aged 21–26 years with a clinical diagnosis of atraumatic translational shoulder instability were recruited. Symptom duration ranged from 3-months to 11-years and formal circus education between 1 and 6 years. Average interview time was 19 minutes (range 12–28 minutes). Five overarching themes were identified: (i) impact, (ii) opportunity, (iii) developing routine, (iv) client-therapist relationship, and (v) transformation. Though each theme is described separately, a relationship between the themes was identified for some participants. Participants that viewed the pandemic as an opportunity for shoulder rehabilitation, tended to describe positive impacts (mental and/or physical), were able to commit to the program by developing a new routine within the pandemic environment, build positive client-therapist relationships, and better understand their condition and how this translates to future management. A comprehensive list of supporting quotes can be found in Appendix 2.

### Impact

Two forms of impact (i.e., subthemes) were identified—physical and mental. All participants reported positive physical changes to their shoulder condition including improved strength, stability, range of motion, posture and muscle memory, and reduced pain, "clicking" and "clunking." Reportedly, these changes carried over into function with improvements in handstand performance and strength training tasks.

> *I've found that my shoulder doesn't like slip around as much . . . also in like actual physical like load-bearing stuff . . . they feel more stable in that as well.—P9*
>
> *I noticed how stabilised my handstands became in my shoulders, which I wasn't aware of before. . . . I also felt like, just doing push ups and standard exercises . . . it was more easy for me to control myself through the motion, especially downward dog push ups.—P2*
>
> *. . . it just feels like my range of mobility has become much better, and I guess they [shoulders] just feel more protected in a sense, like when I do my handstands and other exercises, they just feel more stable.—P12*

The mental impact of the exercise program and/or the pandemic was described in terms of three aspects: (i) cognitive factors, (ii) social factors and (iii) affective factors. Cognitive factors were representative of thoughts and beliefs (e.g., fear, avoidance, catastrophising) associated with symptoms relating to the shoulder. Further, it was also clear that participants held beliefs that underpinned the mental impact of their shoulder injury.

> *It had the feeling of, will it [shoulder] stay in place, or will it not . . . I have always feared that if I pushed it just a little more it will dislocate.—P11*

As a result of the intervention exercise program, participants identified that there was a change in relation to the mental impact and their reported shoulder symptoms.

> *Prior to doing this program I felt a lot of anxiety/stress in relation to my shoulder. Not because the pain was particularly bad or that it prevented me from much of my training (rather, I felt like the pain wasn't bad enough to justify seeing a physio) but because I didn't understand what was causing the pain or if it would get worse over time.—P1*

Social factors included any external factor that may have influenced their social life and wellbeing, and thus

outcomes in the shoulder study (e.g., social isolation, loneliness and workplace issues). Re-uniting with family was a key feature mentioned by six participants.

*I've kind of loved it [COVID-19]. Just a break. . . . I got to go home and see my family, which I wouldn't have got to do, that is the longest time I've seen them in ages, so that was really nice.—P5*

One participant spoke about the perceived social pressure from the arts industry regarding body image:

*. . . frustration with the way that I was eating or am eating. I'm in an industry that is so focussed on physicality and um, you know and body and what our bodies look like and conditioned to be in terms of strength and flexibility.—P2*

Two participants spoke about pursuing personal hobbies external to circus:

*I'm someone who's interested in so many different things that I generally don't have time for, so in a way, kind of amazing [COVID-19], and then also in many ways it's been, like, terrible."—P9*

Affective factors represented emotional factors or responses to the shoulder rehabilitation program during the pandemic. This included feelings of depression, anxiety and stress.

*. . . Everything I'm doing is in bed, like I can be on my Zoom calls in bed. It's cold and I don't want to get up, I have nowhere else to go.—P14*
*For a couple of weeks, I was getting really stressed out, because I am actively de-training and my day is all over the place. I was putting a lot of pressure on myself to try and keep life in the same semblance as it was before.—P5*
*There was of course a lot of anxiety at first around the general uncertainty of seemingly everything but after that initial shock [COVID-19] I switched my focus onto the things that were in my control.—P1*

There appeared to be a link between physical and mental impact, with participants reporting an improvement in confidence and reliability of their shoulder with improving physical functioning (e.g., strength and stability).

*I feel confident in saying that my shoulder is strong at least relative to 12 weeks ago. I can measure that by the number of shrugs I could do then versus now and I can feel it when doing handstands and other exercises.—P1*

## Opportunity

Nine of the 14 participants made direct reference to the pandemic being a facilitator to the WIP1, by providing an opportunity to focus on rehabilitation.

*I thought it was good, especially with it being during COVID-19. I felt like it was very beneficial. Even if I had like a lazy day and didn't train, I would at least still do the shoulder rehab, so it keeps you up to a minimum level which is good. Whereas I feel like it could've been more tricky during normal training and more tiring to actually do, whereas it was probably easier in these circumstances.—P3*

*In general, it feels like I've been given the chance to build the foundations that I should have had before starting full-time training at NICA. Mentally through a stronger mindset and self-care practices and physically through this program and the other injury prevention work I've been doing.—P1*

Three others reported a preference for the WIP1 to be implemented onsite at NICA, and two made no mention of the pandemic being a facilitator or barrier to their participation in the program.

## Developing Routine

Nine performers that reported the pandemic as an opportunity for rehabilitation, also commented on development of new routines. Participants reported increased time availability to undertake their exercises and the provision of a focus during times of limited training (shoulder rehabilitation), as facilitators to their commitment, and consequential self-reported improvement in adherence.

*Having the routine was really helpful for me, and my mental health outside of the shoulder study. Because of COVID-19, everything has been up and down a lot, but having something that was a constant, it was so nice.—P14*
*. . . It takes like half an hour to 45 minutes, but during COVID-19 you have all day everyday so there isn't much to do, so it is pretty easy to get it in.—P5*

Although new routines were devised, 10 of 14 participants commented that the WIP1 was time-consuming:

*. . . Dedicating 30 to 40 minutes every single day to just do rehab exercises . . . can be challenging.—P13*
*If we weren't in isolation I think the biggest thing for me would have been finding the time, because like I have to get up early, I have to go to NICA for circus studies and being around a lot of circus people kind of distracts you a lot, so I think it would be hard to focus and really focus my attention to the exercises that I was doing.—P2*

Commitment to the 12-week exercise program required participants to take ownership of their rehabilitation, and self-initiate an exercise routine based on the guidance of their physiotherapist. Three participants felt that their adherence would have been enhanced if the program was run at NICA in non-pandemic times where there was institutionalised structure for rehabilitation sessions:

*I didn't have that schedule that I was used to and obviously, like I tried to implement it but it was yeah I didn't always do that" "like if it had been not COVID, it would've just fitted in.—P10*

## Client-Therapist Relationship

Thirteen of the 14 participants felt that their treating physiotherapist provided effective, engaging communication. An appreciation for good organisation, flexibility with appointments, and responsiveness to queries was also reported.

*It was easy to communicate to her [physiotherapist], so if I had a problem it didn't seem like something like I want to hide away or*

*anything. It was something that I wanted to address and show her.—P11*
*. . . [physiotherapist] was great with emailing all that information in a way that I really understood. So yeah, I found him really valuable.—P8*

Despite this positivity, 9 of 14 participants reported that the program would have been easier with face-to-face visits, expressing a desire for therapeutic touch to assist facilitation of scapular position and correction of exercise technique. Some also expressed a desire to have soft tissue release and massage as adjuncts to the WIP1 intervention.

*It would definitely be easier face to face if he [physiotherapist] could like physically like move my shoulder or something like that to be in the right position, but it wasn't too bad.—P7*
*When I go and see a physio and they say, this muscle activates it like this, I will stand there moving until they correct me, you know, I need to be poked, I need to be pushed into the position because that is the best way for me to feel where I need to be. . . . not having that hands-on was challenging.—P8*

### Transformation

Participants moved through a progressive transformation of learning. Participants initially gained new knowledge through internal (e.g., exercise practice, joint position sense) and external feedback (e.g., exercise equipment, therapist feedback).

*I was starting to be able to sense where my shoulders were and what I needed to do to get them in the correct position, to hold my handstands for longer.—P13*

Newly acquired knowledge helped address their prior concerns and beliefs about their shoulder, and understand the possible relationship between their symptoms:

*Prior to this program I felt somewhat resigned to the idea that I just had a weak shoulder, and it would probably always be an obstacle throughout my life as a circus artist. I knew that my shoulders were unstable but didn't know how to make it better.—P1*
*I don't think I realised how much my shoulders, how much more I could get out of them, and how much there was actually wrong with them. I wouldn't have realised that I can just move, like you know, just move my shoulders around and actually activate the right muscles so that it doesn't click.—P6*

The final stage of this learning paradigm was the application of newfound knowledge to future management of their shoulder, specifically to circus training and performance:

*I feel very educated on my shoulder which is great. . . . I feel like I have a lot of tools now, and a lot of resources to take and move forwards so I can keep progressing.—P13*
*I do a lot of handstands, and there were definitely moments in my handstands where I'm trying out a new shape, and I thought, if I just like move my shoulder blade over here, and it worked!—P6*

## DISCUSSION

COVID-19 has had a significant impact on our way of life. For athletes, the pandemic has been associated with the postponement and cancellation of competitions and performances, consequently creating a need to proactively adapt to ensure peak mental and physical fitness.[3] This requirement to adapt may be even more relevant for those athletes rehabilitating from injury during the pandemic. The current study sought to explore the experience and adjustment to a 12-week shoulder rehabilitation program during the pandemic in a group of circus arts students. Based on a qualitative methodology, five key themes were identified: impact, opportunity, routine, client-therapist relationship and transformation.

### Impact

Physical and mental impacts pertaining to their shoulder were identified in response to the delivery of the WIP1. Consistent with past research,[14,21] participants reported positive physical impacts (e.g., decreased pain, increased stability and strength) following the completion of the WIP1. Report of improved shoulder stability is likely to reflect an optimised scapula position during motion.[22] In relation to mental impact, participants commonly reported anxiety and stress (affective factors), however cognitive factors (i.e., belief about the possibility of persistent shoulder symptoms and risk of future injury[23]) were described to have a stronger influence on their condition. The circus population have lower baseline levels of mental health compared to normative scores, increasing their risk of worsening mental state[24]; however, this did not hinder physical gains.[25] This it thought to be due to early perceived changes in pain and shoulder function, having a positive influence on self-efficacy,[22] motivation and program adherence.

Delivery of the shoulder rehabilitation program during a pandemic environment revealed positive and negative social impacts. Some participants described social isolation, loneliness and an inability to see friends and family, previously echoed by public health researchers in other pandemics.[26–28] Social isolation may result from loss or interruption to routine, lack of contact with others, and lead to associated feeling of loneliness and alter in mood (increased stress, frustration and boredom).[26,27] Furthermore, experiencing loneliness is strongly associated with musculoskeletal pain.[29] While participants described these social impacts, they still achieved positive physical gains. Positive remarks appeared to align with those who reported the extra time available in lockdown as an opportunity to improve health and wellbeing. It is possible that regular interaction with their treating physiotherapist, provided a source of social contact, and helped to alleviate feelings of isolation.

### Opportunity

The pandemic brought about momentous change to the lives of people across the globe. For study participants, disruption to education delivery and circus training were of

particular note. Time appeared to be a key facilitator for opportunity. Participants spoke about pandemic restrictions giving them time to rehabilitate their shoulder and build a foundation of local muscle group strength and control that they found difficult to complete during normal NICA scheduling. It also provided a chance to participate in self-care practices, focus on building a stronger mindset, take a break, reflect, and pursue interests that they would previously not have had the time to do. These reflections are consistent with recent media commentaries on pandemic opportunities.[30,31]

## Developing Routine

Research has identified that pandemics, enforced social isolation, and quarantine procedures can result in loss of usual routine.[26] During the pandemic first lockdown, participants in this study were required to abide by changing government regulations, adapt to off campus teaching, and therefore minimal access to circus apparatus, and were physically disconnected from family, friends and their university colleagues.

Adapting to the pandemic and implementing structure was described as influencing exercise program engagement. Participants reported the routine of daily exercise and weekly physiotherapy consultations helpful in establishing a new structure within an ever-changing pandemic environment. This may have facilitated a change in mindset and a focus on personal development—strategies recommended by Jukic.[3] It was also clear that a key factor impacting intervention outcomes was participant commitment. Participants frequently commented on the extended duration of their daily WIP1 (30–40 minutes). For some participants, lockdown had a detrimental impact on adherence due to increased free time and reduced motivation. These findings are consistent with past research that reiterate the importance of addressing poor motivation[32] and implementing a structured progressive task-based exercise program.[33] Though the intensity of the program was fully explained to participants prior to commencement, most participants (8/14) felt the program was time-consuming and could become a barrier during usual NICA scheduling.[34] However, due to the pandemic, participants had more time to engage in the intervention for the 12-week duration. Furthermore, the physical effects of the WIP1 are maintained at six-months with a reduction in intensity of the program following the initial 12-week rehabilitation period.[14] Prior to commencement of rehabilitation programs, practitioners should clearly outline the time commitment and compliance required to achieve reported outcomes and long-term change.

## Client-Therapist Relationship

Participants readily identified that an important part of the intervention program was the relationship they had with their therapist. Effective communication was identified to promote engagement, including addressing concerns. These findings are consistent with the premise that client-physiotherapist relationships develop through effective communication and the facilitation of autonomy in the client.[35]

Traditionally, physiotherapy interventions have been underpinned by face-to-face interactions, however the pandemic required consultations to occur virtually. The online therapeutic space is reported to facilitate openness, create a sense of safety to share information, and lead to less inhibition.[36] Teleconsultation appointment times were made flexible for study participants, and communication via email was encouraged. However, many participants identified missing the traditional form of therapeutic touch as a component of treatment across both exercise technique and/or manual treatment (e.g., massage, trigger point therapy). Despite this, the positive outcomes reported by participants reflect the growing evidence for the use of technologies to deliver healthcare, particularly during the pandemic, with teleconsultation being reported to be as efficacious as traditional face-to-face delivery.[36] This is particularly applicable to the current study cohort, with younger populations utilising technology as a ubiquitous part of life.[37]

## Transformation

At study commencement, participants expressed a lack of understanding in relation to their shoulder symptoms. However, as the intervention progressed, participants gained knowledge and understood more about their shoulder condition and its impact on function. Participants also reported application of this new knowledge to their circus specific skills and daily life. It is possible that motor control training may have facilitated development of knowledge through motor learning, previously shown to improve muscle recruitment and scapular kinematics in other shoulder pathologies.[38] Motor learning and consequential self-reported physical changes may have resulted from scapular and humeral head re-training exercises prescribed in the WIP1,[16,18] although there is no quantitative data to confirm these motor control changes. Despite this, the positive impact of implementing change through knowledge acquisition is consistent with past research and current recommendations for the management of musculoskeletal pain conditions.[39,40]

## Limitations

Several limitations are acknowledged. As the study was based on a qualitative methodology involving a limited number of student circus performers, the findings may not be directly transferable to other populations. The study was also cross-sectional and therefore not able to assess true causal changes associated with the WIP1 intervention. Finally, the study did not include quantitative assessments relating to patient reported outcomes (including specific areas of change) or account for the experience of the therapists involved.

## Conclusion

To the best of our knowledge, this is the first qualitative study to examine the effects of an exercise intervention during the COVID-19 pandemic. The delivery of WIP1 via teleconsultation is an efficacious method for delivering a structured exercise rehabilitation program for shoulder instability and promotes understanding of the condition for long term self-management. This delivery is supported by strong client-therapist relationships, and as such, it is recommended that practitioners instil optimism and positivity during the pandemic and encourage their clients to see this time as an opportunity for physical rehabilitation and personal development.

## Research Impact

The COVID -19 pandemic provided a unique opportunity for individuals to undertake injury rehabilitation during an absence of usual training and performance. Rehabilitation for atraumatic shoulder instability can be delivered effectively via teleconsultation to improve physical function and long-term management of their shoulder condition, facilitated by strong client-therapist relationships and a structured program. Readers are recommended to utilise guidelines from relevant peak professional bodies (e.g., American Physical Therapy Association) in relation to telehealth-based interventions.[41]

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***Author Contributions:***

CG: Physiotherapist. Study design and implementation, interview transcription, data analysis; manuscript construction, editing and approval of the final manuscript. CG is known to circus arts students and organisation but was not involved in the collection of data.

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SRK: Psychologist. Study design, implementation, analysis; manuscript construction; editing and approval of the final manuscript. SRK is a senior qualitative researcher but was not known to circus arts students or organisation.

## REFERENCES

1. Côrte ACR, Camargo-Junior F, Chalhub T, et al. COVID-19 and its effects on olympic sport: the importance of studying social isolation and the harm it causes, in order to minimise it. *Rev Bras Med Esporte*. 2020;26:371–7. https://doi.org/10.1590/1517-869220202605237107.
2. Pillay L, Janse van Rensburg DCC, Jansen van Rensburg A, et al. Nowhere to hide: the significant impact of coronavirus disease 2019 (COVID-19) measures on elite and semi-elite South African athletes. *J Sci Med Sport*. 2020;23(7):670–9. https://doi.org/10.1016/j.jsams.2020.05.016.
3. Jukic I, Calleja-González J, Cos F, et al. Strategies and solutions for team sports athletes in isolation due to COVID-19. *Sports (Basel, Switz)*. 2020;8(4):56. https://doi.org/10.3390/sports8040056.
4. Podlog L, Eklund RC. A longitudinal investigation of competitive athletes' return to sport following serious injury. *J Appl Sport Psychol*. 2006;18(1):44–68. https://doi.org/10.1080/10413200500471319.
5. Hammami A, Harrabi B, Mohr M, Krustrup P. Physical activity and coronavirus disease 2019 (COVID-19): specific recommendations for home-based physical training. *Manag Sport Leisure*. 2020:1–6. https://doi.org/10.1080/23750472.2020.1757494.
6. Ji J-G, Kim KB, Kwak YS. The practical impacts of exercise-intervention on Covid-19 pandemic [abstract]. *Exerc Sci*. 2020;29(4):339–46. https://doi.org/10.15857/ksep.2020.29.4.339.
7. Stubbe JH, Richardson A, van Rijn RM. Prospective cohort study on injuries and health problems among circus arts students. *BMJ Open Sport Exerc Med*. 2018;4(1):1–5. https://doi.org/10.1136/bmjsem-2017-000327.
8. Shrier I, Meeuwisse WH, Matheson GO, et al. Injury patterns and injury rates in the circus arts: an analysis of 5 years of data from Cirque du Soleil. *Am J Sports Med*. 2009;37(6):1143–9. https://doi.org/10.1177/0363546508331138.
9. Munro D. Injury patterns and rates amongst students at the national institute of circus arts: an observational study. *Med Probl Perform Art*. 2014;29(4):235–40. https://doi.org/10.21091/mppa.2014.4046.
10. Bateman M, Jaiswal A, Tambe AA. Diagnosis and management of atraumatic shoulder instability. *J Arthrosc Joint Surg*. 2018;5(2):79–85. https://doi.org/10.1016/j.jajs.2018.05.009.
11. Noorani A, Goldring M, Jaggi A, et al. BESS/BOA patient care pathways: atraumatic shoulder instability. *Shoulder Elbow*. 2019;11(1):60–70. https://doi.org/10.1177/1758573218815002.
12. Lewis A, Kitamura T, Bayley JIL. The classification of shoulder instability: new light through old windows! *Curr Orthopaed*. 2004;18(2):97–108. https://doi.org/10.1016/j.cuor.2004.04.002.
13. Burkhead W, Rockwood C. Treatment of instability of shoulder with an exercise program. *J Bone Joint Surg Br*. 1992;74(6):890–6.
14. Warby SA, Ford JJ, Hahne AJ, et al. Comparison of 2 Exercise rehabilitation programs for multidirectional instability of the glenohumeral joint: a randomized controlled trial. *Am J Sports Med*. 2018;46(1):87–97. https://doi.org/10.1177/0363546517734508.
15. Bateman M, Osborne SE, Smith BE. Physiotherapy treatment for atraumatic recurrent shoulder instability: updated results of the Derby Shoulder Instability Rehabilitation Programme. *J Arthrosc Joint Surg*. 2019;6(1):35–41. https://doi.org/10.1016/j.jajs.2019.01.002.
16. Watson L, Warby S, Balster S, et al. The treatment of multidirectional instability of the shoulder with a rehabilitation program: pt 1. shoulder elbow. 2016;8(4):271–8. https://doi.org/10.1177/1758573216652086. PubMed Central: PMCPMC5023053.
17. Ganderton C, Kerr B, King M, et al. The intra-rater and inter-rater reliability of hand-held dynamometry for shoulder strength assessment in circus arts students. *Med Probl Perform Art*. 2021;36(2):88–102. https://doi.org/10.21091/mppa.2021.2014.
18. Watson L, Warby S, Balster S, et al. The treatment of multidirectional instability of the shoulder with a rehabilitation programme: pt 2. Shoulder elbow. 2017;9(1):46–53. https://doi.org/10.1177/1758573216652087. PubMed Central: PMCPMC

5441614.
19. Birt L, Scott S, Cavers D, et al. member checking: a tool to enhance trustworthiness or merely a nod to validation? *Qual Health Res*. 2016;26(13):1802–11. https://doi.org/10.1177/1049732316654870.
20. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3(2):77–101. https://doi.org/10.1191/1478088706qp063oa.
21. McIntyre K, Bélanger A, Dhir J, et al. Evidence-based conservative rehabilitation for posterior glenohumeral instability: a systematic review. *Phys Ther Sport*. 2016;22:94–100. https://doi.org/10.1016/j.ptsp.2016.06.002.
22. Watson L, Balster S, Lenssen R, et al. The effects of a conservative rehabilitation program for multidirectional instability of the shoulder. *J Shoulder Elbow Surg*. 2018;27(1):104–11. https://doi.org/10.1016/j.jse.2017.07.002.
23. Chester R, Khondoker M, Shepstone L, et al. Self-efficacy and risk of persistent shoulder pain: results of a classification and regression tree (CART) analysis. *Br J Sports Med*. 2019;53(13):825–34. https://doi.org/10.1136/bjsports-2018-099450.
24. van Rens FECA, Heritage B. Mental health of circus artists: psychological resilience, circus factors, and demographics predict depression, anxiety, stress, and flourishing. *Psychol Sport Exerc*. 2021;53:101850. https://doi.org/10.1016/j.psychsport.2020.101850.
25. De Baets L, Matheve T, Meeus M, et al. The influence of cognitions, emotions and behavioral factors on treatment outcomes in musculoskeletal shoulder pain: a systematic review. *Clin Rehabil*. 2019;33(6):980–91. https://doi.org/10.1177/0269215519831056.
26. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020;395(10227):912–20. https://doi.org/10.1016/S0140-6736(20)30460-8.
27. Taylor MR, Agho KE, Stevens GJ, Raphael B. Factors influencing psychological distress during a disease epidemic: data from Australia's first outbreak of equine influenza. *BMC Public Health*. 2008;8:347. https://doi.org/10.1186/1471-2458-8-347. PubMed Central: PMCPMC2571100.
28. Smith B, Lim M. How the COVID-19 pandemic is focusing attention on loneliness and social isolation. *Public Health Res Pract*. 2020;30(2):e3022008. https://doi.org/https://doi.org/10.17061/phrp3022008.
29. Smith TO, Dainty JR, Williamson E, Martin KR. Association between musculoskeletal pain with social isolation and loneliness: analysis of the English Longitudinal Study of Ageing. *Br J Pain*. 2019;13(2):82–90. https://doi.org/10.1177/2049463718802868. PubMed Central: PMCPMC6463349.
30. Haski-Leventhal D. Seven positive outcomes of COVID-19. Macquarie Univ.; 27 Apr 2020 [cited 2020 23.12.]. Available from: https://lighthouse.mq.edu.au/article/april-2020/seven-positive-outcomes-of-covid-19.
31. Rice-Oxley M. Splendid isolation: what will you learn? *The Guardian*. 13 Mar 2020 [cited 2020 23.12.]. Available from: https://www.theguardian.com/world/2020/mar/13/splendid-isolation-what-will-you-learn-coronavirus.
32. Wilson K, Brookfield D. Effect of goal setting on motivation and adherence in a six week exercise program. *Int J Sport Exerc Psychol*. 2009;7(1):89–100. https://doi.org/10.1080/1612197X.2009.9671894.
33. Herrington L, Myer G, Horsley I. Task based rehabilitation protocol for elite athletes following anterior cruciate ligament reconstruction: a clinical commentary. *Phys Ther Sport*. 2013;14(4):188–98. https://doi.org/10.1016/j.ptsp.2013.08.001.
34. Rodrigues IB, Armstrong JJ, Adachi JD, MacDermid JC. Facilitators and barriers to exercise adherence in patients with osteopenia and osteoporosis: a systematic review. *Osteoporosis Int*. 2017;28(3):735–45. https://doi.org/10.1007/s00198-016-3793-2.
35. Søndenå P, Dalusio-King G, Hebron C. Conceptualisation of the therapeutic alliance in physiotherapy: is it adequate? *Musculoskel Sci Pract*. 2020;46. https://doi.org/10.1016/j.msksp.2020.102131.
36. Fletcher-Tomenius LJ, Vossler A. Trust in online therapeutic relationships: the therapist's experience. *Counsel Psychol Rev*. 2009;24(2):24–33.
37. Simpson S, Richardson L, Pietrabissa G, et al. Videotherapy and therapeutic alliance in the age of COVID-19. *Clin Psychol Psychother*. 2020;28(2):409–421. https://doi.org/10.1002/cpp.2521.
38. Worsley P, Warner M, Mottram S, et al. Motor control retraining exercises for shoulder impingement: effects on function, muscle activation, and biomechanics in young adults. *J Shoulder Elbow Surg*. 2013;22(4):e11–e9. https://doi.org/10.1016/j.jse.2012.06.010.
39. Lin I, Wiles L, Waller R, et al. What does best practice care for musculoskeletal pain look like?: eleven consistent recommendations from high-quality clinical practice guidelines: systematic review. *Br J Sports Med*. 2020;54(2):79–86. https://doi.org/10.1136/bjsports-2018-099878.
40. Hill CL, Appleton SL, Black J, et al. Role of health literacy in self-reported musculoskeletal disorders. *Arthritis*. 2015;2015:607472. https://doi.org/10.1155/2015/607472.
41. American Physical Therapy Association. Telehealth in practice. Alexandria, VA; APTA; 2021. [cited 2021 May 10]. Available from: https://www.apta.org/your-practice/practice-models-and-settings/telehealth-practice.

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## APPENDIX 1. Interview Guide

***Interview introduction:***

*"Thank you for agreeing to participate in an interview following the completion of your shoulder rehabilitation program. The purpose of this interview is to listen to your experiences during the shoulder exercise program and to discover the impacts of the COVID-19 pandemic on these experiences.*

*I plan to interview a number of students that have completed the shoulder rehabilitation program. Following the interview, it will be transcribed, and sent to your university email account. You can review this document, and if you feel that the interview did not capture all the information that you would like to share with the research team, you will have an opportunity to provide any additional information at this time. Following receipt of all responses, these will be analysed to detect common themes. You will not be identified personally in any publication or presentation that results from this research, however, quotes from your interview may be reported. If you have any questions as we proceed, please ask me. If there is anything you do not wish to answer, please let me know. Do you have any questions before we commence? Do you consent to continue with the interview?"*

***Interview questions/script:***

***Opening frame 1:*** To begin with I would like to hear about how the shoulder rehabilitation program impacted on your health and wellbeing.
***Opening question 1***: What are your thoughts about the shoulder rehabilitation program that you have just completed?
***General probes 1 (determined by initial response):***
- — Can you tell me more about that?
- — What do you mean by…?
- — Why might that be the case?
- — Did you expect to have such changes?

**Specific probes 1 (determined by initial response):**
- — Can you tell me about any changes that you experienced upon participating in this program?
- — How do you feel now, compared to before the study?
  - ○ How do you feel this program has influenced on your physical health?
  - ○ How do you feel this program has influenced on your mental health?
  - ○ How do you think the COVID-19 pandemic has contributed to your mental health
- — Can you elaborate on what part of the program contributed to these feelings and experiences?

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***Opening frame 2:*** I'd like to move now to your engagement with the program.
***Opening question 2***: How would you describe your engagement with the program?
***Probes 2 (determined by initial response):***
- — Can you tell me more about that?
- — What do you mean by. . . ?
- — Why might that be the case?

**Specific probes 2 (determined by initial response):**
- — What about your level of adherence?
- — How did the program fit into your life? (further prompt re: Was it easy or difficult and can you elaborate on this?)
- — Can you comment on the relationship you had with your physiotherapist? (further prompt: on your physical and mental health?)
- — Can you tell us about any other factors that influenced your ability to complete your exercise program? (further prompt work, family, friends, pain)

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***Opening frame 3:*** I'd like to move now to your thoughts and feelings around the delivery of the shoulder rehabilitation program. Originally the program was pitched as a face to face delivery. The program was then transferred to a telehealth platform due to COVID-19.
***Opening question 3***: Can you describe your initial thoughts when you heard that the program was to be delivered via telehealth?
***Probes 3 (determined by initial response):***
- — Can you tell me more about that?
- — What do you mean by. . . ?
- — Why might that be the case?

**Specific probes 3 (determined by initial response):**
- — How did these feelings change throughout the 12 weeks?

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***Opening frame 4:*** The next set of questions are focused on the COVID-19 pandemic
***Opening question 4***: What impacts do you feel the COVID-19 pandemic had on you throughout the duration of the study?
***Probes 4 (determined by initial response):***
— Can you tell me more about that?
— What do you mean by . . . ?
— Why might that be the case?
**Specific probes 4 (determined by initial response):**
— How has the COVID-19 pandemic impacted on your engagement in the shoulder rehabilitation program? (additional prompt: "What about your adherence to the program?")
— How has the COVID-19 pandemic impacted on your physical health?
— How has the COVID-19 pandemic impacted on your mental health?

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***Opening frame 5:*** Now that the intensive 12-week rehabilitation program is complete . . .
***Opening question 5***: What does your future hold in regard to your shoulder?
***Probes 5 (determined by initial response):***
— Can you tell me more about that?
— What do you mean by . . . ?
— Why might that be the case?
**Specific probes 5 (determined by initial response):**
— Could you discuss whether you think you will keep up the exercises that you have been taught?
— And what about any other treatments?
— And what about return to circus?

Open feedback
Is there anything else you would like to say that we haven't covered in the interview?

_____

_____

_____

*Thank you so much for completing this interview today. I will email you a copy of your interview transcript so that you can read through it and add any additional information, should you wish to.*

## APPENDIX 2. Supporting Quotes

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|---|---|
| **Theme 1: Impact** | |
| **Subtheme: Physical change** | |
| P12 | *"It just feels like my range of mobility has become much better, and I guess they [shoulders] just feel more protected in a sense, like when I do my handstands and other exercises, they just feel more stable""My alignment . . . has improved heaps and my handstands have become so much stronger as well so that's really fun."* |
| P11 | *"It's [shoulder] stable, I can control it more, I can rely on it more"* |
| P14 | *"I can do the exact same exercises, and the exact same amount of reps on both shoulders, so I'm like, Wow."* |
| P9 | *"I've found that my shoulder doesn't like slip around as much . . . also in like actual physical like load-bearing stuff . . . they feel more stable in that as well."* |
| P4 | *"so my shoulder used to like just, at rest, would like ache and if I moved it, it would crunch a lot . . . it's kind of just stopped hurting all the time, which is really nice actually. It just like feels a bit more stable. I feel like it sits in the right, a bit more of a better position now."* |
| P1 | *"I noticed multiple physical changes- my shoulder feels stronger now and less unstable when I'm doing handstands and I also feel less (almost zero) pain. In connection with these changes have been some more mental shifts like my confidence and feeling of empowerment."* |
| P3 | *"Before when I'd do like lots of chin uppy things my shoulder would get stuck forward and afterwards and I'd have to clunk it back, and now it doesn't clunk back."* |
| P6 | *"I can do push ups like really fast now, I could always do a lot of push ups, but they [shoulders] were always kind of slow, and now I can make them a lot faster."* |
| P2 | *"I noticed how stabilised my handstands became in my shoulders, which I wasn't aware of before. . . . I also felt like, just doing push ups and standard exercises, um, it was more easy for me to control myself through the motion, especially downward dog push ups."* |
| **Subtheme: Mental Impact (Cognitive factors)** | |
| P11 | *"It had the feeling of, will it [shoulder] stay in place, or will it not. . . . I have always feared that if I pushed it just a little more it will dislocate."* |
| P1 | *"Prior to doing this program I felt a lot of anxiety/stress in relation to my shoulder. Not because the pain was particularly bad or that it prevented me from much of my training (rather, I felt like the pain wasn't bad enough to justify seeing a physio) but because I didn't understand what was causing the pain or if it would get worse over time."* |
| **Subtheme: Mental Impact (Social Factors)** | |
| P2 | *"Not being able to see friends and go out as much had kind of dampened my spirits . . . but at least I have some sort of social connection that I can engage in [family]."* |
| P8 | *"Mentally, I live alone so it has been a bit lonely"* |
| P2 | *"Frustration with the way that I was eating or am eating" "I'm in an industry that is so focussed on physicality and um, you know and body and what our bodies look like, and conditioned to be in terms of strength and flexibility."* |
| P5 | *"I've kind of loved it [Covid-19]. Just a break." "I got to go home and see my family, which I wouldn't have got to do, that is the longest time I've seen them in ages, so that was really nice."* |
| P9 | *"I'm someone who's interested in so many different things that I generally don't have time for, so in a way, kind of amazing [Covid-19], and then also in many ways it's been, like, terrible."* |
| **Subtheme: Mental Impact (Affective)** | |
| P14 | *"Everything I'm doing is in bed, like I can be on my Zoom calls in bed. It's cold and I don't want to get up, I have nowhere else to go".* |
| P7 | *"I think I could go bit stir crazy sometimes when I just I needed to get out of the house... I think I got a bit frustrated sometimes, but I was not too down or anything like that" [impact of Covid-19 on mental health].* |
| P5 | *"For a couple of weeks, I was getting really stressed out, because I am actively de-training and my day is all over the place. I was putting a lot of pressure on myself to try and keep life in the same semblance as it was before."* |
| P1 | *"There was of course a lot of anxiety at first around the general uncertainty of seemingly everything but after that initial shock [Covid-19] I switched my focus onto the things that were in my control." "There were also days when all I wanted to do was stay in bed and eat ice cream."* |
| **Theme 2: Opportunity** | |
| P9 | *"It's a great thing because it means that I'm not loading it in, like, really heavy ways where it has to kind of protect itself and, like, use bigger muscles and I can focus in on, like, fine tuning all the tracking and stuff like that."* |
| P3 | *"I thought it was good, especially with it being during Covid-19. I felt like it was very beneficial. Even if I had like a lazy day and didn't train, I would at least still do the shoulder rehab, so it keeps you up to a minimum level which is good. Whereas I feel like it could've been more tricky during normal training and more tiring to actually do, whereas it was probably easier in these circumstances."* |

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| P1 | *"This period of isolation has given me time. Before, I felt like I was just barely holding everything together." "In general, it feels like I've been given the chance to build the foundations that I should have had before starting full-time training at NICA. Mentally through a stronger mindset and self-care practices and physically through this program and the other injury prevention work I've been doing." "I am benefiting from the timing of Covid-19 happening because it was sort of one of those things that I think, like, I was already behind, in a lot of skills involving my shoulder because it was unstable and then not supporting me anymore, or becoming painful when I was doing certain activities and that sort of thing, and so, by having this break from school and then going back to it, now that I have done a bit more of that building up a strong foundation, you know, a bit more stability, I'm a lot more confident in my ability to progress, and meet those sort of benchmark skills that they expect."* |
| **Theme 3: Developing routine** | |
| P13 | *"It [shoulder exercise program] is also very nice to have, especially during like isolation, like to have it kinda put the structure through my day . . . isolation really did help me stay on track I think."* |
| P14 | *"Having the routine was really helpful for me, and my mental health outside of the shoulder study because of COVID-19, everything has been up and down a lot, but having something that was a constant, it was so nice."* |
| P10 | *"I didn't have that schedule that I was used to and obviously, like I tried to implement it but it was yeah I didn't always do that." "Like if it had been not COVID, it would've just fitted in."* |
| P2 | *"If we weren't in isolation I think the biggest thing for me would have been finding the time, because like I have to get up early, I have to go to NICA for circus studies and being around a lot of circus people kind of distracts you a lot, so I think it would be hard to focus and really focus my attention to the exercises that I was doing."* |
| P13 | *"Dedicating 30 to 40 minutes every single day to just do rehab exercises, um, can be challenging"* |
| P12 | *"When you saw how I improved from week to week, that made it very easy to commit to it."* |
| P7 | *"I think it's probably the most I've ever committed to doing a like rehab programs, so I think it actually did help."* |
| P5 | *"It takes like half an hour to 45 minutes, but during COVID-19 you have all day everyday so there isn't much to do, so it is pretty easy to get it in."* |
| **Theme 4: Client-therapist relationship** | |
| **Subtheme: Social and emotional connection** | |
| P14 | *"She [physiotherapist] was just so hyped about my shoulder and about my progress that it made me also feel hyped. I was also like, you're right I'm doing great, so it was a joy to see [physiotherapist] every week."* |
| P11 | *"It was easy communicate to her [physiotherapist], so if I had a problem it didn't seem like something like I want to hide away or anything, it was something that I wanted to address and show her."* |
| P8 | *"[Physiotherapist] was great with emailing all that information in a way that I really understood. So yeah, I found him really valuable."* |
| P2 | *"I had no problem or hesitation engaging with her, and she made me feel comfortable."* |
| **Subtheme: Therapeutic touch** | |
| P12 | *"I just think in terms of making sure you are using the right muscles and doing it correctly it would've been good to have that face-to-face interaction."* |
| P8 | *"When I go and see a physio and they say, this muscle activate it like this, I will stand there moving until they correct me, you know, I need to be poked, I need to be pushed into the position because that is the best way for me to feel where I need to be. . . . Not having that hands-on was challenging." "There was a week that I just completely misinterpreted the exercise and was just doing it wrong so I think in those instances that sort of stuff would have been just to have more hands-on."* |
| P7 | *"It would definitely be easier face to face if he [physiotherapist] could like physically like move my shoulder or something like that to be in the right position, but it wasn't too bad."* |
| P6 | *"I think having that physical presence of someone being able to in a session, being like, this is how you do it, and like, put in the right spot and be like, yep that's right, you know, I think that would provide more confidence."* |
| P2 | *"A massage always feels good."* |
| **Theme 5: Transformation** | |
| **Subtheme: Gaining of knowledge** | |
| P13 | *"I was starting to be able to sense where my shoulders were and what I needed to do to get them in the correct position, to hold my handstands for longer."* |
| P5 | *"The [exercise] band really gives you feedback, so you're reminded how well you are tracking, and sort of the right positioning . . . it like amplifies any good or bad technique, having the band around your shoulder. So, it was really, if you are letting your shoulder drop and not being in the right spot, it also was like being forced down into the wrong spot, whereas if you are pulling it up, you can feel it resisting you, and you have to really actively put it in the right spot which is, yeah, it makes you a lot more active in your, um, your awareness to putting your shoulder right while doing your other exercises."* |
| P2 | *"I felt like I didn't realise how unstable my shoulder was until I noticed the benefits of the exercises, and also comparing one shoulder to the other and seeing, hey, this one actually feels stronger now. Whereas before it was actually quite weak compared to the other one."* |
| P1 | *"Prior to this program I felt somewhat resigned to the idea that I just had a weak shoulder and it would probably always be an obstacle throughout my life as a circus artist." "I knew that my shoulders were unstable but didn't know how to make it better."* |

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| **Subtheme: Understanding** | |
| P11 | *"It [shoulder study] really made me think about how the muscular system worked, it really opened my eyes and ah, yeah it showed me a lot about what I can do, what my body is capable of and how I can increase my ability of what my muscles could do if another situation happened like the same thing happened with my leg, I'll know how to approach it."* |
| P14 | *"I do a lot to protect my shoulder, and so many subconscious things that I had never even thought about that I'm like, oh, these are all linked, um and like, just helping me realise that they are all linked." "Oh now I understand like this is why my handstands are like this and this is why my chin ups are like this."* |
| P6 | *"Like my main complaint was . . . a bit of a pinching, and there was a clunking sometimes, but I thought this is just how it is. . . ." "I don't think I realised how much my shoulders, how much more I could get out of them, and how much there was actually wrong with them."* |
| P13 | *"It [the shoulder study] kind of made us think for ourselves for a little bit, which, you know, we not always going to have shoulder physiotherapists guiding us through the rest of our careers, so it was also nice to be put in the deep end a little bit." "I wouldn't have realised that I can just move, like you know, just move my shoulders around and actually activate the right muscles so that it doesn't click."* |
| **Subtheme: Application of new knowledge** | |
| P1 | *". . . throughout the process of completing this program I started being able to understand how to engage the muscles around my shoulder and I knew what it felt like when it was 'solid' which also meant that I knew what it felt like when it wasn't solid and could adjust my training accordingly rather than push through the pain or instability as I potentially would have done in the past." "I now have the ability to assess my own training which has been especially helpful amidst social isolation which mean I haven't had a coach to make those assessments and give me advice recently."* |
| P6 | *"I do a lot of handstands, and there were definitely moments in my handstands were I'm trying out a new shape, and I thought, if I just like move my shoulder blade over here, and it worked!"* |
| P13 | *"I feel very educated on my shoulder which is great. . . . I feel like I have a lot of tools now, and a lot of resources to take and move forwards so I can keep progressing."* |