



Article

The Knowledge and Use of the International Classification of Functioning, Disability and Health (ICF) Framework in Athletic Training

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Abstract: In 2015, the Strategic Alliance adopted the International Classification of Functioning, Disability, and Health (ICF) as the disablement model framework for delivery of and communication about patient care in athletic training. The purpose of this study was to examine athletic trainers' familiarity, knowledge, application, and implementation of the ICF framework. We used a cross-sectional online survey with 185 athletic trainers (age = 35 ± 9 y), which included 32 items focused on familiarity, knowledge, application, and implementation of the ICF framework. Most participants ($n = 96$, 51.9%) reported never learning about the ICF framework. During the knowledge assessment, participants scored 4.3 ± 2.7 out of 8, which is equivalent to 53.7%. For the sorting assessment, participants scored 10.9 ± 3.9 out of 18, which is equivalent to 60.5%. On the implementation matrix, the most frequently reported ICF tasks elicited by the athletic trainers included neuromusculoskeletal and movement, structure related to movement, and mobility. The most common 'never elicited' ICF tasks included voice and speech, sexual orientation, and structures related to genitourinary and reproductive system. Deficits related to the ICF framework exist. Athletic trainers reported low implementation across all ICF categories. The decision to not elicit information on these areas of health may reduce the ability to provide patient-centered healthcare.

Keywords: patient-centered care; sports medicine; professional development



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1. Introduction

According to the Commission on Accreditation of Athletic Training Education (CAATE) 2020 Standards, the core competency of patient-centered care has five key standards for professional athletic trainers, which are as follows: (1) advocate for the health needs of clients, patients, communities, and populations; (2) analyze the impact of health literacy and social determinants of health on patient care and outcomes to determine healthcare strategies that empower patients and improve outcomes; (3) incorporate patient education and self-care programs to engage patients and their families and friends to participate in their care and recover; (4) communicate effectively and appropriately with clients/patients, family members, coaches, administrators, other healthcare professionals, consumers, payors, policy makers, and others; and (5) use the International Classification of Functioning, Disability, and Health (ICF) as a framework for delivery of and communication about patient care [1]. The use of disablement models such as the ICF framework allow clinicians to focus their treatment on the unique needs of each patient [2]. Disablement is experienced differently among individuals; however, the theme of each person's experience can fit into four disablement components: impairments, functional limitation, disability limitation, and quality-of-life changes, thus making it a key perspective for patient-centered care delivery [3]. In a published application of the ICF model to athletic training, an adolescent

patient participating in basketball sustains a distal radius fracture (health condition), which impacts her range of motion and mobility (body functions and structures impairments), limiting her ability to hold a pencil in class and dribble the basketball (activity limitations) and thus leading to problems with homework and participating in basketball practice (participation restrictions) [4]. In addition, a holistic lens of the ICF model explores environmental factors such as insurance status and personal factors such as age, gender, and sexual orientation [4].

There are several forms of disablement models, including the World Health Organization (WHO) Classification, the Nagi Model, the National Center for Medical Rehabilitation Research (NCMRR) Model, and the ICF framework. In 2008, the National Athletic Trainers' Association (NATA) determined the need to select a disablement model for athletic trainers to implement in the profession [5]. In 2015, the Strategic Alliance, including the NATA and the CAATE, adopted the ICF framework [6]. The ICF framework has been used as a tool in healthcare and has allowed clinicians to recognize biases, improve patient-centered outcomes, and facilitate helpful conversations with patients [7]. Athletic trainers can use the ICF framework to provide a means for delivering detailed injury evaluation, examine the effects of an injury on patients' health-related quality of life, and treat their patients with a holistic approach [8].

Previous research from 2010 exploring the disablement process in physically active individuals with musculoskeletal injuries identified common limitations within the patient such as pain, decreased motion and muscle function, instability, skill performance, daily actions, maintaining a position, and quality of life through the lens of fear, energy, mood, and relationships [3]. These limitations describe the full perspective, from limitations at the body systems level to the impact on social roles, of how the injury is experienced for the patient. The use of patient-reported outcome measures has been used as a mechanism to explore the disablement model when assessing topics such as health-related quality of life, although multiple patient-reported outcome measures need to be utilized to capture multiple disablement domains and health dimensions [2]. Unfortunately, the use of patient-reported outcome measures continues to be infrequent [9–11]. The athletic training profession has been slow to integrate the ICF framework into clinical practice. In a recent study exploring key components and viewpoints of patient-centered care, a large majority of athletic trainers reported that they did not consider the ICF framework a necessary component of patient-centered care [12]. When following up with these participants, when they were asked why they did not consider the ICF part of patient-centered care, many individuals reported simply not knowing what the ICF framework was or how to use it [12]. Previous researchers remarked that if clinicians and researchers understand the concept of disablement, then treatment outcomes can be measured in areas patients identified as important [3]. We can presume that if athletic trainers do not fully comprehend the ICF framework and its use to support patient care, this will lead to a lack of implementation in their clinical practice. Therefore, the purpose of this study was to examine athletic trainers' knowledge and implementation of the ICF framework.

2. Materials and Methods

To examine athletic trainers' knowledge and implementation of the ICF framework, we designed a cross-sectional study using a web-based survey. The Indiana State University Institutional Review Board deemed this study exempt.

2.1. Participants

The study was sent to 7000 potential participants who were members of NATA and opted into the survey research database.

2.2. Instruments

To explore our research question, the research team developed a multi-item survey containing six demographic questions and three instruments focused on their knowledge,

application, and use of the ICF framework (Appendix A). The first instrument (15 items) explored the participants' background in relation to the ICF framework, including their familiarity, previous learning experiences (select all that applied), and 8 knowledge assessment questions that asked each participant to select the best answer (or 'I do not know' if they were unsure, rather than guessing) relative to where the example fit into the ICF framework components. In the second instrument, the participants completed a sorting matrix to apply a list of pre-selected category statements ($n = 18$) from the World Health Organization into the 6 major categories of the ICF framework. In the third and final instrument, the participants shared, in terms of their patient load, and when relevant to the patient's condition, how often they elicited and/or documented information on the functioning and disability of a patient specific to the 5 major categories of the ICF framework. For each major category, a short list was created by extracting the tasks from the ICF Checklist 2.1 from the World Health Organization [13]. The participant shared if they elicited/documented each task on a 5-point Likert scale (never; some patients; about half of my patients; most of my patients; always). If the participant selected never for any of the tasks in the major category, a follow-up item with 5 possible responses was presented, asking them why they did not elicit/document that information.

To validate the survey, a panel of experts ($n = 3$; 2 women and 1 man) who have researched and presented on the ICF framework were called upon. The expert started by marking each question as "needs attention" or "sufficient as written", with detailed feedback on each question in the survey which they thought may need revisions. After that, the primary and senior investigator completed the revisions based on their feedback. Next, the research team sent a copy of the revised survey along with a content analysis rubric. The content analysis rubric asked each expert to score each item in the survey based on relevancy and clarity on a 4-point Likert scale (1 = not relevant, 4 = very relevant; 1 = not clear, 4 = very clear). The scores from the panel of experts were inputted into a data sheet to analyze the relevancy score and clarity score ranging from 0 to 1, with 1 indicating consensus amongst the panel. After the experts' analysis, the survey received a content validation index (CVI) score of 0.95 for clarity. On average, an acceptable CVI score for relevancy is greater than or equal to 0.9 [14], which we exceeded. Overall, the survey achieved content validity (CVI; relevance = 1.0, clarity = 0.95).

2.3. Procedures

The research team collected the data electronically using an anonymous web-based survey (Qualtrics, Provo, UT). Recruitment emails were sent once a week beginning in May 2022. The initial emails were sent on 17 May 2022, then reminders were sent 24 May 31 May and 7 June. The same process was repeated for four weeks, beginning in September 2022. The initial emails were sent 6 September, then reminder emails were sent 13 September, 20 September, and 27 September. The same sample ($n = 7000$) was used for both data collection periods to capture those who never started or had unfinished responses. After clicking on the link, an inclusion criteria question was presented to ensure the respondent was a certified athletic trainer, followed by electronic informed consent. The participants then proceeded with the survey, with the option to stop and exit the survey at any time.

2.4. Data Analysis

Data were collected and transferred from the web-based survey platform into a custom spreadsheet for data cleaning. We analyzed the data using SPSS 28 (IBM Corporation, Armonk, NY, USA). We performed descriptive statistics (mean, standard deviation, and frequencies) for all items. To measure the knowledge and background of athletic trainers in the ICF framework, we created a knowledge assessment score. The total number of correct answers out of all the questions asked was translated into a percentage score per participant for both the sort matrix and the definition knowledge-based questions. The knowledge assessment was out of 8 questions and the sort matrix was out of 18. When

considering years of experience, we classified and compared the groups with 0 to 7 years of experience, given the adoption of the ICF in 2015, to those with more than 7 years of experience using a Mann–Whitney U non-parametric statistic for the knowledge assessment score. Significance was set at $p < 0.05$ a priori. To assess the frequency of implementation of the ICF checklist, measures of central tendency (mean, median, mode, and standard deviation) were calculated for each item on the checklist.

3. Results

3.1. Participants

In total, 270 athletic trainers started the survey and 185 completed the survey: a completion rate of 68.5%. The participants shared their age, highest degree earned, number of years credentialed as an athletic trainer, race/ethnicity, current job setting, and number of patients or potential patients at their current job/clinical site. Most athletic trainers who participated (age = 35 ± 9 y; women = 122, 65.9%) had a professional ($n = 82$, 44.3%) or post-professional ($n = 71$, 38.4%) master's degree, and 11 ± 8 years of experience as a credentialed athletic trainer. Table 1 describes the participants included in the analysis.

Table 1. Participant Demographics.

Characteristic	<i>n</i> , %
Gender	
Woman	122, 65.9%
Man	60, 32.4%
Transgender Man	1, 0.5%
Prefer to Self-Describe	2, 1.1%
Ethnicity	
White/Caucasian	159, 85.9%
American Indian/Alaskan Native/Indigenous	1, 0.5%
Asian/Asian American	1, 0.5%
Black/African American	5, 2.7%
Hispanic/Latinx	5, 2.7%
Native Hawaiian/Pacific Islander	1, 0.5%
2 or more races	9, 4.9%
Another option not listed	1, 0.5%
Prefer not to say	3, 1.6%
Job Setting	
Amateur, Recreation or Youth Sports	2, 1.1%
Clinic and Physician Practice	15, 8.1%
College/University	77, 41.6%
Health/Fitness/Sports/Performance Enhancement Hospital	2, 1.1%
Independent Contractor	1, 0.5%
Military, Law Enforcement and Government	1, 0.5%
Occupational Health and Industrial	9, 4.9%
Performing Arts	12, 6.5%
Professional Sports	3, 1.6%
Secondary School	5, 2.7%
	58, 31.4%

3.2. Familiarity and Knowledge

Over half of athletic trainers stated they were unfamiliar with the concept of disablement models ($n = 96$, 51.9%) and that they were unfamiliar with the ICF framework specifically ($n = 99$, 53.5%). Figure 1 describes the familiarity of the participants in more detail.

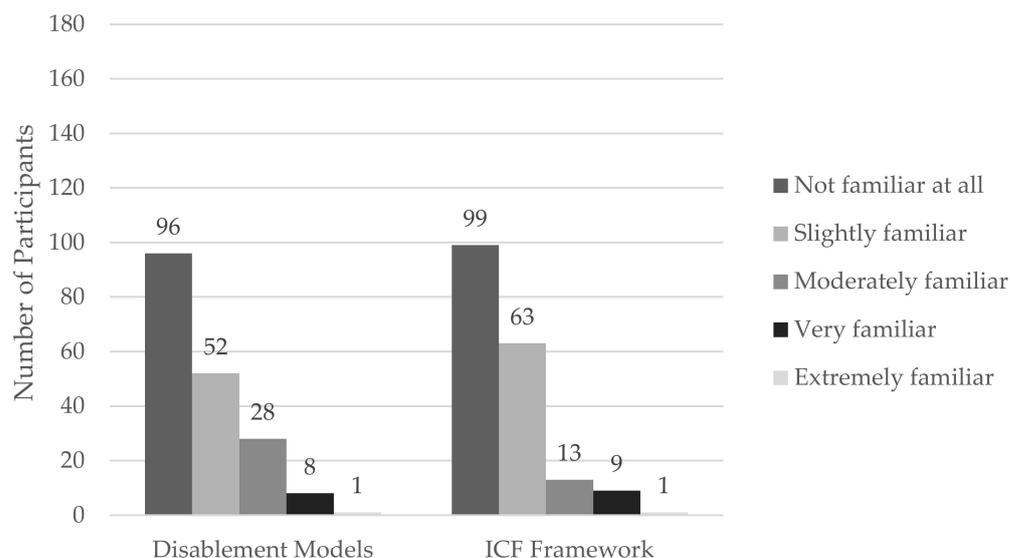


Figure 1. Participant familiarity with Disablement Models and the ICF framework.

Most participants ($n = 96, 51.9\%$) reported never learning about the ICF framework. Of the participants who had learned about the ICF framework, most were taught during their professional or post-professional athletic training education program ($n = 48, 25.9\%$). Table 2 details the learning methods for the participants who had learned about the ICF framework.

Table 2. Participant educational experiences related to the ICF framework.

Learning Method	n, %
I have not learned about it	96/185, 51.9%
I have learned about it (Select all that apply)	89/185, 48.1%
During my Professional Athletic Training Program	24
During my Post-Professional Athletic Training Program	24
Informally by a colleague	18
Informally through self-education	18
Continuing education session by an athletic trainer	17
Reading journal articles	14
Continuing education session by a different healthcare provider	8
Required/Mandated in-service by employer	6
Other	5

The comparison of years of experience, relative to when the profession adopted the ICF disablement framework, revealed significant differences between groups ($U = 3313, Z = -2.104, p = 0.035$), whereby those with 0 to 7 years of experience (mean = $60.6 \pm 30.3\%$) scored 18.3% higher than those with more than 7 years of experience (mean = $49.5 \pm 35.0\%$).

On the knowledge assessment, the participants scored a 4.3 ± 2.7 , which is equivalent to 53.7%. The components that over 60% of athletic trainers were able to correctly identify included Body Structure Impairments ($n = 112, 60.5\%$ correct), Activity Limitations (117, 63.2% correct), and Body Structures (133, 71.9% correct). The athletic trainers on the knowledge question related to *Participation Restrictions* ($n = 28, 15.1\%$ correct). Table 3 outlines the questions, correct answers, and number of participants who answered correctly for the knowledge assessment.

Table 3. Participant knowledge scores related to the different components of the ICF framework.

Question stem: What Component of the ICF Framework Does the Following Example Describe?	Correct Answer	Participants Answering Correctly (n, %)
Physiological functions of body systems	Body Function	106, 57.3%
The execution of a task or action by an individual	Activity	97, 52.4%
Problems an individual may experience during involvement in life situations	Participation Restrictions	28, 15.1%
Problems in body structure such as significant deviation or loss	Body Structure Impairments	112, 60.5%
Anatomical parts of the body such as organs, limbs, and their components	Body Structures	133, 71.9%
The physical, social, and attitudinal environment in which people live and conduct their lives	Environmental Factors	111, 60.0%
Difficulties an individual may have in executing tasks like lifting weights or combing hair	Activity Limitations	117, 63.2%
Involvement in a life situation	Participation	91, 49.2%

3.3. Sorting Application

During the sorting assessment, athletic trainers scored a 10.9 ± 3.9 out of 18, which is equivalent to 60.5%. The participants were best able to sort examples that correlated with body function and health conditions. However, participants inadequately sorted components into ICF categories for social cues in relationships into the activity component ($n = 20, 10.8%$) and living with family into the personal component ($n = 26, 14.1%$). Table 4 describes the sorting assessment and the number of correctly answered examples.

Table 4. Sorting Application Matrix of Category Statements.

ICF Framework Component	Correct ICF Framework Major Category	Correctly Sorted (n, %)
Regulation of emotion	Body function	44, 23.8%
Managing diet and fitness	Activity	85, 45.9%
Individual attitudes of friends	Environmental	86, 46.5%
Muscles of shoulder region	Body structure	141, 76.2%
Generalized anxiety disorder	Health condition	122, 65.9%
Abuse of addictive drugs	Personal	42, 22.7%
Heart rate	Body function	131, 70.8%
Bursitis related to use, overuse, and pressure	Health condition	119, 64.3%
Cornea	Body structure	141, 76.2%
Population density	Environmental	141, 76.2%
Living with family	Personal	26, 14.1%
Managing daily routine	Activity	115, 62.2%
Acute Sinusitis	Health condition	141, 76.2%
Social cues in relationships	Activity	20, 10.8%
Immediate family	Environmental	74, 40.0%
Female biological sex	Personal	52, 28.1%
Power of muscles in lower half of body	Body function	121, 65.4%
Kidney	Body structure	140, 75.7%

3.4. Implementation and Use

On the implementation matrix, the ICF tasks the athletic trainers most commonly elicited or recorded information about during patient care included neuromusculoskeletal movement ($n = 65, 35.1%$; body function), structure related to movement ($n = 63, 34.1%$, body structure), and mobility ($n = 45, 24.3%$; activity and participation). The most common never-elicited ICF tasks included voice and speech ($n = 77, 41.6%$; body function), sexual orientation ($n = 71, 38.4%$; personal), structure related to genitourinary and reproductive system ($n = 51, 27.6%$, body structure), and community, social, and civic life ($n = 44, 23.8%$; activity and participation). Tables 5–9 provide data about the participants patient load, and, when relevant to the patient’s condition, how often they elicit and/or document information on the functioning and disability of a patient specific to each ICF major component.

Table 5. Participant Report of Screening in Clinical Practice for Impairments of Body Functions (*n*, %).

Impairments	Never Elicited	Some Patients	About Half of My Patients	Most of My Patients	Always Elicited	Did Not Answer
Mental (ex: sleep, orientation, emotion)	19, 10.3%	70, 37.8%	26, 14.1%	30, 16.2%	11, 5.9%	29, 15.7%
Sensory (ex: seeing, hearing, pain)	25, 13.5%	39, 21.1%	12, 6.5%	44, 23.8%	36, 19.5%	29, 15.7%
Voice and Speech	77, 41.6%	55, 29.7%	2, 1.1%	16, 8.6%	5, 2.7%	30, 16.2%
Cardiovascular, Hematological, Immunological, and Respiratory Systems (ex: heart, blood pressure, breathing, allergies)	20, 10.8%	70, 37.8%	22, 11.9%	29, 15.7%	14, 7.6%	30, 16.2%
Digestive, Metabolic, and Endocrine Systems (ex: weight, hormones, defecation)	41, 22.2%	75, 40.5%	19, 10.3%	14, 7.6%	6, 3.2%	30, 16.2%
Genitourinary and Reproductive (ex: urinary, sexual)	67, 36.2%	67, 36.2%	10, 5.4%	9, 4.9%	1, 0.5%	31, 16.8%
Neuromusculoskeletal and Movement (ex: mobility, power, tone)	9, 4.9%	20, 10.8%	7, 3.8%	54, 29.2%	65, 35.1%	30, 16.2%
Skin and Related Structures	19, 10.3%	55, 29.7%	32, 17.3%	37, 20%	12, 6.5%	30, 16.2%

Table 6. Participant Report of Screening in Clinical Practice for Impairments of Body Structures (*n*, %).

Impairments	Never Elicited	Some Patients	About Half of My Patients	Most of My Patients	Always Elicited	Did Not Answer
Nervous System structures (ex: brain, spinal cord, nerves)	11, 5.9%	56, 30.3%	24, 13%	29, 15.7%	24, 13%	41, 22.2%
Eye, ear, and related structures	14, 7.6%	78, 42.2%	20, 10.8%	19, 10.3%	14, 7.6%	40, 21.6%
Structures involved in voice and speech	49, 26.5%	72, 38.9%	3, 1.6%	11, 5.9%	10, 5.4%	40, 21.6%
Structure of the cardiovascular, immunological, and respiratory systems	20, 10.8%	75, 40.5%	19, 10.3%	17, 9.2%	14, 7.6%	40, 21.6%
Structures related to the digestive, metabolism, and endocrine systems	37, 20%	73, 39.5%	14, 7.6%	13, 7%	8, 4.3%	40, 21.6%
Structures related to genitourinary and reproductive system	51, 27.6%	73, 39.5%	6, 3.2%	8, 4.3%	7, 3.8%	40, 21.6%
Structure related to movement (ex: shoulder, pelvis, lower extremity)	8, 4.3%	18, 19.7%	8, 4.3%	48, 25.9%	63, 34.1%	40, 21.6%
Skin and related structures	13, 7%	62, 33.5%	20, 10.8%	32, 17.3%	18, 9.7%	40, 21.6%

Table 7. Participant Report of Screening in Clinical Practice for Activity Limitations and Participation (*n*, %).

Limitation	Never Elicited	Some Patients	About Half of My Patients	Most of My Patients	Always Elicited	Did Not Answer
Learning and Applying Knowledge (ex: listening, watching, solving problems)	27, 14.6%	56, 30.3%	17, 9.2%	21, 11.4%	18, 9.7%	46, 24.9%
General Tasks and Demands (ex: single tasks, multiple tasks)	26, 14.1%	46, 24.9%	21, 11.4%	28, 15.1%	19, 10.3%	45, 24.3%
Communication (ex: spoken message, non-verbal message, conversation)	28, 15.1%	50, 27%	19, 10.3%	29, 15.7%	14, 7.6%	45, 24.3%
Mobility (ex: lifting, carrying, grasping, driving)	9, 4.9%	21, 11.4%	18, 9.7%	47, 25.4%	45, 24.3%	45, 24.3%
Self Care (ex: washing, toileting, dressing, eating, drinking)	28, 15.1%	57, 30.8%	15, 8.1%	24, 13%	14, 7.6%	47, 25.4%
Domestic Life (ex: shopping, cooking, cleaning, assisting others)	42, 22.7%	46, 24.9%	18, 9.7%	26, 14.1%	8, 4.3%	45, 24.3%
Interpersonal interactions and relationships (ex: basic, complex, strangers, social, family, intimate)	40, 21.6%	63, 34.1%	19, 10.3%	11, 5.9%	6, 3.2%	46, 24.9%
Major life areas (ex: school, higher education, employment, economic self-sufficiency)	28, 15.1%	53, 28.6%	17, 9.2%	30, 16.2%	11, 5.9%	46, 24.9%
Community, social, and civic life (ex: recreation, leisure, religion, spirituality, political life)	44, 23.8%	47, 25.4%	18, 9.7%	22, 11.9%	8, 4.3%	46, 24.9%

Table 8. Participant Report of Screening in Clinical Practice for Environmental Factors (*n*, %).

Factor	Never Elicited	Some Patients	About Half of My Patients	Most of My Patients	Always Elicited	Did Not Answer
Products and technology (ex: food, medicine, transportation)	22, 11.9%	55, 29.7%	21, 11.4%	34, 18.4%	4, 2.2%	49, 26.5%
Natural environment and human made changes to environment (ex: climate, light, sound)	31, 16.8%	66, 35.7%	19, 10.3%	18, 19.7%	2, 1.1%	49, 26.5%
Support and relationships (ex: immediate family, friends, neighbors, health professionals)	19, 10.3%	63, 34.1%	23, 12.4%	27, 14.6%	4, 2.2%	49, 26.5%
Attitudes (ex: individual attitudes of friends, societal attitudes, social norms, ideologies)	23, 12.4%	61, 33.0%	27, 14.6%	22, 11.9%	3, 1.6%	49, 26.5%
Services, systems, and policies (ex: housing, transportation, education, health services, legal, social security)	30, 16.2%	69, 37.3%	18, 9.7%	16, 8.6%	3, 1.6%	49, 26.5%

Table 9. Participant Report of Screening in Clinical Practice for Personal Factors (*n*, %).

Factor	Never Elicited	Some Patients	About Half of My Patients	Most of My Patients	Always Elicited	Did Not Answer
Lifestyle	21, 11.4%	56, 30.3%	20, 10.8%	28, 15.1%	9, 4.9%	51, 27.6%
Habits	21, 11.4%	53, 28.6%	24, 13.0%	28, 15.1%	8, 4.3%	51, 27.6%
Social Background	32, 17.3%	70, 37.8%	12, 6.5%	15, 8.1%	5, 2.7%	51, 27.6%
Education	43, 23.2%	54, 29.2%	8, 4.3%	23, 12.4%	6, 3.2%	51, 27.6%
Life Events	16, 8.6%	65, 35.1%	20, 10.8%	26, 14.1%	7, 3.8%	51, 27.6%
Race/ethnicity	59, 31.9%	48, 25.9%	5, 2.7%	16, 8.6%	6, 3.2%	51, 27.6%
Sexual orientation	71, 38.4%	51, 27.6%	4, 2.2%	7, 3.8%	1, 0.5%	51, 27.6%
Individual psychological assets	31, 16.8%	68, 36.8%	15, 8.1%	17, 9.2%	3, 1.6%	51, 27.6%
Age	27, 14.6%	45, 24.3%	12, 6.5%	18, 9.7%	32, 17.3%	51, 27.6%
Gender	37, 20.0%	42, 22.7%	7, 3.8%	21, 11.4%	27, 14.6%	51, 27.6%
Upbringing	55, 29.7%	56, 30.3%	12, 6.5%	11, 5.9%	0, 0.0%	51, 27.6%
Food Preferences	40, 21.6%	59, 31.9%	13, 7.0%	20, 10.8%	2, 1.1%	51, 27.6%
Fitness	11, 5.9%	41, 22.2%	18, 9.7%	39, 21.1%	25, 13.5%	51, 27.6%
Coping Style	36, 19.5%	48, 25.9%	28, 15.1%	18, 9.7%	4, 2.2%	51, 27.6%

4. Discussion

Our study assessed athletic trainers' familiarity, knowledge, application, and implementation of the ICF framework. It was important to explore these variables in athletic trainers, as the professional Strategic Alliance, including the NATA and the CAATE, adopted the ICF framework in 2015 as a foundation to guide patient evaluation [6]. The data collected suggest that ICF framework familiarity, knowledge, application, and implementation deficits exist for athletic trainers. While some athletic trainers reported use of the ICF framework in their practice, the overall implementation across all ICF major categories was low. The decision to not elicit information on these areas of health, regardless of reason, may reduce the ability to provide patient-centered, whole-person healthcare.

4.1. Familiarity with and Knowledge of Disablement Models

Disablement models are conceptual frameworks that can be used to guide patient evaluation, treatment, and overall care [15]. Their broad view of the patient, from injury diagnosis to impact on life roles, provides an opportunity to care for the patient in a more patient-centered manner. Patient-reported outcome measures are one tool available to address various disablement model components, yet familiarity with disablement models is low [16]. Specifically, clinicians with five or more years of experience were much less likely to be familiar with the ICF framework [17].

Our findings suggest that most athletic trainers reported being unfamiliar with or never learning about disablement models, much like other experienced healthcare clinicians. One contributing factor for this low awareness may be the reality that disablement

models are relatively recent in athletic training, and adoption of the ICF has only been implemented since 2015. Additionally, the most recent educational standards, introduced in 2020, were the first to include the disablement model as a required element of professional education programs. Our data suggest that athletic trainers credentialed since 2015 (7 or fewer years of experience) scored significantly higher than those with more experience. This idea is supported by the work of Landon et al., who reported that clinicians with five or more years of experience were much less likely to be familiar with the ICF framework [16]. Research suggests that more direct experience with a topic results in greater familiarity with and understanding of said topic [18]. In our study, only 26% of participants had learned about the ICF framework through an athletic training program and 13.5% learned about it through a continuing education session. Low familiarity with a topic leads to decreased knowledge of that topic. In a similar study with occupational therapists and physiotherapists, only 29% of the respondents knew what the components of the ICF framework were [19]. Similarly, another study exploring healthcare professionals in developing countries identified that only 31% of respondents had knowledge of the ICF components [20]. Much like other healthcare professionals who have low familiarity on the topic of the ICF framework, athletic trainers also demonstrated low knowledge of the specific ICF framework components.

Participants who were enrolled in education programs after the framework was introduced and adopted were more likely to have been exposed to these models as part of their professional preparation school; however, this leaves many athletic trainers without professional development on the topic. While one may assume that experience will lead to exposure to emerging ideas that align with advancements in care, one study on physicians found the opposite was true, demonstrating the need for some sort of intervention for healthcare providers [21]. The field of athletic training is continually evolving, which means that mechanisms or processes are needed to ensure that all professionals have ways to gain information that aligns with new standards and advancements in practice. For example, the Board of Certification is evolving their programs and advancing continuing professional certification programs [22]. One option could be holding workshops for athletic trainers to attend, detailing the new standards and the scope of training expansion areas. In order to accomplish this, athletic trainers that were eligible for their Board of Certification exam prior to the new curricular standards and the scope of training expansions for athletic training, including the ICF frameworks, should have mandated training. The development of a competence assessment module focused on the ICF framework could serve as a meaningful learning opportunity to identify their need for self-actualized learning [22]. Furthermore, attendance at such workshops does not ensure comprehension or implementation. The continued professional development of athletic trainers surrounding new curricular content standards should be evaluated through knowledge assessments and quality improvement implementation projects [22]. It is crucial to increase familiarity because there is a positive correlation between familiarity with the ICF framework and the use of it [17].

4.2. Application of the ICF Framework

Athletic trainers in our study demonstrated difficulty applying specific ICF framework component examples to the correct major category. The concern regarding being unable to perform this task alludes to the fact that while athletic trainers may feel they know what goes into whole-person healthcare, they fall back on the ideas that impairments are the issue and they do not broaden their perspectives. The difficulty linking these could lead to poor goal setting development by the athletic trainer, which is focused on the anatomical issues (e.g., lack of arm strength) rather than activity limitation or participation restriction (e.g., carrying groceries up the stairs or golfing with friends). It could also lead to poor documentation organization. One mechanism that could help athletic trainers sort and apply the ICF framework to clinical practice is the use of the ICF browser tool [23]. This tool could be used by athletic trainers to quickly look up ICF framework components and gain an understanding of where they are classified. Additionally, ICF core sets have been

developed and could be useful for athletic trainers to use in clinical practice. The ICF core sets were developed as a systematic way to describe health conditions and with a minimalistic design to keep use of the model efficient [21]. A simple example used by the World Health Organization, applying a health condition to various levels of functioning utilizing the ICF framework, was the health condition of a spinal injury, with the impairment being paralysis, the activity limitation being incapable of using public transportation, and the participation restriction of no participation in religious activities due to no public transportation use [24]. Without integrating the ICF framework, a clinician may have approached this patient by treating and managing their chief concern, which could be paralysis. The focus of the goals and care plan would be their paralysis in terms of range of motion and strength. Using a disablement model, the clinician is able to identify key areas that may be specific, activity-based goals that are of importance to the patient's life. Tools such as the Disablement in the Physically Active Scale and the Patient-Specific Functional Scale have been developed to assist athletic trainers when exploring the problems their patients face after injury [25,26]. These tools also allow the patient to be integrated through a shared decision-making process to identify important activities they are unable to perform or struggle to accomplish due to their health condition. The use of these scales and goal setting mechanisms allows the athletic trainer to address personal factors, such as anxiety and fear, as well as important activities such as attending religious services. The provided case example demonstrates the value of applying ICF framework components to specific situations to provide the best whole-person healthcare to a specific individual's situation, which sees a person as more than their condition or impairments.

4.3. Implementation of the ICF Framework in Clinical Practice

In our survey, using the implementation matrix, the most reported ICF tasks the athletic trainers elicited included neuromusculoskeletal movement (35.1%; body function), structure related to movement (34.1%, body structure), and mobility (24.3%; activity and participation). These findings are unsurprising, given the significant emphasis on musculoskeletal care and movement assessments that are part of athletic training education. The most common never-elicited ICF tasks included voice and speech, sexual orientation, structure related to genitourinary and the reproductive system, and community, social, and civic life. Although athletic trainers successfully incorporated the documentation relating to physical and biomechanical components, they struggled to implement the majority of the other ICF tasks, such as sexual orientation. It is important to increase the implementation of ICF components because it facilitates whole-patient care and allows interventions to be refocused to address the unique needs of each patient. Athletic trainers strongly believe that they are patient centered and have a willingness to be more patient centered, yet do not implement things such as the ICF framework into clinical practice [12]. This is why it is important to provide resources or educational opportunities for athletic trainers to learn more about certain components of the ICF framework. The survey indicated a weakness in asking about voice and speech, sexual orientation, or reproductive systems, and about community, social, and civic life. It is possible that athletic trainers work with a population in which these problems are not as common; however, if they do, athletic trainers could work interprofessionally with a speech language pathologist to better understand the importance of asking about voice and speech. Educational resources could be provided to athletic trainers on the patient-centered care of lesbian, gay, bisexual, transgender, and queer patients, because they have indicated a desire to learn how to provide the best care for that population [27]. Finally, attending events in the community to better understand the social and civic life of the patient population could be helpful, since community and social life can affect health outcomes [28,29].

4.4. Limitations and Future Research

While the data provide insight into the current knowledge and implementation of the ICF framework in athletic training, our study is not without limitations. First, the

study included 185 participants, which equals a 2.64% response rate. This is relatively low. In addition, most of the sample was largely White/Caucasian, which means the results may not be generalized to other populations. However, it is indicative of the athletic training profession demographics. It is important to note that when conducting survey research, it is assumed that individuals are answering the questions truthfully and to the best of their ability, without additional resources. The study was limited to athletic trainers working with patients/in patient care. The results may have been reflected differently for athletic trainers working in research or healthcare administration. In addition, the purpose of the study was only to explore knowledge and implementation of the profession-adopted ICF framework and not to explore other disablement models (e.g., the Nagi model). Researchers can build active educational interventions with outcomes focused on improving the clinician's familiarity and knowledge of the ICF framework. Further explorations of the most effective ways to support the implementation of the ICF framework into practice, including the study of simulation-based learning and the use of quality improvements projects, may help to develop the educational intervention for a clinician to understand what parts of the ICF framework apply to different aspects of the examination.

5. Conclusions

While some athletic trainers are incorporating the ICF model into practice, many retain deficits related to familiarity, knowledge, application, and implementation of the ICF framework into clinical practice. Athletic trainers reported low implementation across all ICF categories. The decision not to elicit information on these areas of health, through use of the ICF framework, is a missed opportunity to support the delivery of patient-centered, whole-person healthcare.

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Appendix A Survey

Question Type	Question
1. Multiple Choice	Are you currently certified to practice Athletic Training by the Board of Certification (BOC) and do you treat patients on a daily basis? Yes (1) No (2)

Question Type	Question
2. Multiple Choice	<p>Do you agree to participate in this study?</p> <p>Yes, I agree to participate No, I do not agree to participate</p>
3. Fill in the Blank	<p>What is your age? Please round to the nearest whole year</p>
4. Multiple Select	<p>What gender do you identify as? Select all that apply</p> <p>Agender Genderqueer Man Transgender Man Non-binary/Gender Non-conforming Transgender Woman Woman Another option not listed here Prefer to self-describe Prefer not to say</p>
5. Multiple Select	<p>What ethnicity do you identify as? Please select all that apply.</p> <p>American Indian/Alaskan Native/Indigenous Asian/Asian American Black/African American Hispanic/Latinx Native Hawaiian/Pacific Islander White/Caucasian 2 or more races Another option not listed here Prefer to self-describe Prefer not to say</p>
6. Multiple Choice	<p>What is your current primary athletic training practice setting? If none apply, please select the one that most closely matches your current setting.</p> <p>Amateur, Rec or Youth Sports Clinic and Physician Practice College/University Health/Fitness/Sports Performance Clinic/Club Hospital Independent Contractor Military, Law Enforcement or Government Occupational Health (Industrial) Performing Arts Professional Sports Secondary School</p>
7. Fill in the Blank	<p>How many years have you clinically practiced as a credentialed Athletic Trainer? Please round up to the nearest year</p>
8. Multiple Choice	<p>What is the highest degree you have earned?</p> <p>Professional Bachelor's Professional Master's Post-Professional Master's Post-Professional Clinical Doctorate (DAT) Academic Doctorate (PhD, EdD, etc.) Other: (Please write in your own response) _____</p>

Question Type	Question
9. Multiple Choice	<p>How familiar are you with disablement models?</p> <p>Not familiar at all Slightly familiar Moderately familiar Very familiar Extremely familiar</p>
10. Multiple Choice	<p>How familiar are you with the International Classification of Functioning, Disability, and Health (ICF) framework?</p> <p>Not familiar at all Slightly familiar Moderately familiar Very familiar Extremely familiar</p>
11. Multiple Select	<p>How did you learn, if at all, about the ICF disablement framework? Mark all that apply.</p> <p>I have not learned about it During my Professional Athletic Training Program During my Post-Professional Athletic Training Program Continuing education session by an athletic trainer Continuing education session by a different healthcare provider Informally by a Colleague (another athletic trainer or different healthcare provider) Reading Journal Articles Informally through Self-Education (finding resources yourself) Required/Mandated In-Service by Employer Other</p>
<p>In This section, you will be asked to select the best answer related to the components of the ICF disablement framework. Please do not use outside resources</p>	
12. Multiple Choice	<p>What component of the ICF framework does the following example describe? Physiological functions of body systems.</p> <p>Body function Body structure Activity Impairment I do not know</p>
13. Multiple Choice	<p>What component of the ICF framework does the following example describe? The execution of a task or action by an individual.</p> <p>Participation Environmental factors Activity Body structure I do not know</p>
14. Multiple Choice	<p>What component of the ICF framework does the following example describe? Problems an individual may experience during involvement in life situations.</p> <p>Participation restrictions Environmental factors Activity limitations Impairments I do not know</p>

Question Type	Question
15. Multiple Choice	<p>What component of the ICF framework does the following example describe? Problems in body structure such as a significant deviation or loss.</p> <p>Participation restrictions Body functions Activity limitations Body structure impairments I do not know</p>
16. Multiple Choice	<p>What component of the ICF framework does the following example describe? Difficulties an individual may have in executing tasks like lifting weights or combing hair.</p> <p>Activity Activity limitations Participation restrictions Participation I do not know</p>
17. Multiple Choice	<p>What component of the ICF framework does the following example describe? Involvement in a life situation.</p> <p>Body functions Activity Participation Environmental factors I do not know</p>
Please sort the statement into the correct ICF framework component by dragging the statement into the appropriate box.	
18. Drag and Drop	<p>Health Condition: Regulation of emotion Managing diet and fitness Individual attitudes of friends Muscles of shoulder region Generalized anxiety disorder Abuse of addictive drugs Heart rate Bursitis, related to use, overuse, or pressure Cornea Population density Living with family Managing daily routine Acute sinusitis Social cues in relationships Immediate family Female biological sex Power of muscles in lower half body Kidney</p>

Question Type	Question
19. Drag and Drop	<p>Body Structures: Regulation of emotion Managing diet and fitness Individual attitudes of friends Muscles of shoulder region Generalized anxiety disorder Abuse of addictive drugs Heart rate Bursitis, related to use, overuse, or pressure Cornea Population density Living with family Managing daily routine Acute sinusitis Social cues in relationships Immediate family Female biological sex Power of muscles in lower half body Kidney</p>
20. Drag and Drop	<p>Body Functions Regulation of emotion Managing diet and fitness Individual attitudes of friends Muscles of shoulder region Generalized anxiety disorder Abuse of addictive drugs Heart rate Bursitis, related to use, overuse, or pressure Cornea Population density Living with family Managing daily routine Acute sinusitis Social cues in relationships Immediate family Female biological sex Power of muscles in lower half body Kidney</p>
21. Drag and Drop	<p>Activities and Participation: Regulation of emotion Managing diet and fitness Individual attitudes of friends Muscles of shoulder region Generalized anxiety disorder Abuse of addictive drugs Heart rate Bursitis, related to use, overuse, or pressure Cornea Population density Living with family Managing daily routine Acute sinusitis Social cues in relationships Immediate family Female biological sex Power of muscles in lower half body Kidney</p>

Question Type	Question
22. Drag and Drop	<p>Environmental Factors: Regulation of emotion Managing diet and fitness Individual attitudes of friends Muscles of shoulder region Generalized anxiety disorder Abuse of addictive drugs Heart rate Bursitis, related to use, overuse, or pressure Cornea Population density Living with family Managing daily routine Acute sinusitis Social cues in relationships Immediate family Female biological sex Power of muscles in lower half body Kidney</p>
23. Drag and Drop	<p>Personal Factors: Regulation of emotion Managing diet and fitness Individual attitudes of friends Muscles of shoulder region Generalized anxiety disorder Abuse of addictive drugs Heart rate Bursitis, related to use, overuse, or pressure Cornea Population density Living with family Managing daily routine Acute sinusitis Social cues in relationships Immediate family</p>
Likert Scale Questions	
24. Likert Scale	<p>In terms of your patient load, and when relevant to the patient’s condition, how often do you elicit and/or document information on the functioning and disability of a patient specific to Impairments of Body Functions? (Never, Some Patients, About, Half the Patients, Most of my patients, and Always)</p> <p>Mental (ex: sleep, orientation, emotion) Sensory (ex: seeing, hearing, pain) Voice and Speech Cardiovascular, Hematological, Immunological, and Respiratory Systems (ex: heart, blood pressure, breathing, allergies) Digestive, Metabolic, and Endocrine Systems (ex: weight, hormones, defecation) Genitourinary and Reproductive (ex: urinary, sexual) Neuromusculoskeletal and Movement (ex: mobility, power, tone) Skin and Related Structures</p>

Question Type	Question
25. Multiple Choice	<p>You selected you 'never' complete at least one or more of the tasks from the previous section. Please tell us why.</p> <p>Do not know what to do (1) Do not know how to do it (2) Did not know I should be doing it (3) Restricted from doing it (4) Will not do it (5)</p>
26. Likert Scale	<p>In terms of your patient load, and when relevant to the patient's condition, how often do you elicit and/or record information on the functioning and disability of a patient specific to Impairments of Body Structures? (Never, Some Patients, About, Half the Patients, Most of the patients, and Always)</p> <p>Nervous System structures (ex: brain, spinal cord, nerves) Eye, ear, and related structures Structures involved in voice and speech Structure of the cardiovascular, immunological, and respiratory systems Structures related to the digestive, metabolism, and endocrine systems Structures related to genitourinary and reproductive system Structure related to movement (ex: shoulder, pelvis, lower extremity) Skin and related structures</p>
27. Multiple Choice	<p>You selected you 'never' complete at least one or more of the tasks from the previous section. Please tell us why.</p> <p>Do not know what to do (1) Do not know how to do it (2) Did not know I should be doing it (3) Restricted from doing it (4) Will not do it (5)</p>
28. Likert Scale	<p>In terms of your patient load, how often do you elicit and/or document information on the functioning and disability of a patient specific to Activity Limitations and Participation? (Never, Some Patients, About, Half the Patients, Most of the patients, and Always)</p> <p>Learning and Applying Knowledge (ex: listening, watching, solving problems) General Tasks and Demands (ex: single tasks, multiple tasks) Communication (ex: spoken message, non-verbal message, conversation) Mobility (ex: lifting, carrying, grasping, driving) Self Care (ex: washing, toileting, dressing, eating, drinking) Domestic Life (ex: shopping, cooking, cleaning, assisting others) Interpersonal interactions and relationships (ex: basic, complex, strangers, social, family, intimate) Major life areas (ex: school, higher education, employment, economic self-sufficiency) Community, social, and civic life (ex: recreation, leisure, religion, spirituality, political life)</p>
29. Multiple Choice	<p>You selected you 'never' complete at least one or more of the tasks from the previous section. Please tell us why.</p> <p>Do not know what to do (1) Do not know how to do it (2) Did not know I should be doing it (3) Restricted from doing it (4) Will not do it (5)</p>

Question Type	Question
30. Likert Scale	<p>In terms of your patient load, how often do you elicit and/or document information on the functioning and disability of a patient specific to Environmental Factors? (Never, Some Patients, About, Half the Patients, Most of the patients, and Always)</p> <p>Products and technology (ex: food, medicine, transportation) Natural environment and human made changes to environment (ex: climate, light, sound) Support and relationships (ex: immediate family, friends, neighbors, health professionals) Attitudes (ex: individual attitudes of friends, societal attitudes, social norms, ideologies) Services, systems, and policies (ex: housing, transportation, education, health services, legal, social security)</p>
31. Multiple Choice	<p>You selected you 'never' complete at least one or more of the tasks from the previous section. Please tell us why.</p> <p>Do not know what to do (1) Do not know how to do it (2) Did not know I should be doing it (3) Restricted from doing it (4) Will not do it (5)</p>
32. Likert Scale	<p>In terms of your patient load, how often do you elicit and/or document information on the functioning and disability of a patient specific to Personal Factors? (Never, Some Patients, About, Half the Patients, Most of the patients, and Always)</p> <p>Lifestyle Habits Social Background Education Life Events Race/ethnicity Sexual orientation Individual psychological assets Age Gender Upbringing Food Preferences Fitness Coping Style</p>
33. Multiple Choice	<p>You selected you 'never' complete at least one or more of the tasks from the previous section. Please tell us why.</p> <p>Do not know what to do (1) Do not know how to do it (2) Did not know I should be doing it (3) Restricted from doing it (4) Will not do it (5)</p>

References

1. Commission on Accreditation of Athletic Training Education. *Implementation and Guide to the CAATE 2020 Professional Standards*; Commission on Accreditation of Athletic Training Education: Austin, TX, USA, 2018.
2. Snyder Valier, A.R.; Bacon, C.E.W.; Lam, K.C. Disablement Model and Health-Related Quality of Life Classification for Patient-Reported Outcomes Measurement Information System (PROMIS) Instruments. *J. Athl. Train.* **2018**, *53*, 1206–1213. [[CrossRef](#)] [[PubMed](#)]
3. Vela, L.I.; Denegar, C. Transient Disablement in the Physically Active with Musculoskeletal Injuries, Part I: A Descriptive Model. *J. Athl. Train.* **2010**, *45*, 615–629. [[CrossRef](#)]
4. Sitzler, B. ICF Model: A Framework for Athletic Training Practice NATA News. 2016. Available online: <https://www.nata.org/blog/beth-sitzler/icf-model-framework-athletic-training-practice> (accessed on 23 February 2022).

5. Parsons, J.T.; McLeod, T.C.V.; Snyder, A.R.; Sauers, E.L. Change Is Hard: Adopting a Disablement Model for Athletic Training. *J. Athl. Train.* **2008**, *43*, 446–448. [CrossRef] [PubMed]
6. Nottingham, S.L. Assessing Professional Students' Application of the International Classification of Functioning, Health, and Disability Model and Patient-Reported Outcome Measures During Patient Care. *Athl. Train. Educ. J.* **2021**, *16*, 316–320. [CrossRef]
7. Atkinson, H.L.; Nixon-Cave, K. A Tool for Clinical Reasoning and Reflection Using the International Classification of Functioning, Disability and Health (ICF) Framework and Patient Management Model. *Phys. Ther.* **2011**, *91*, 416–430. [CrossRef] [PubMed]
8. Snyder, A.R.; Parsons, J.T.; Valovich McLeod, T.C.; Curtis Bay, R.; Michener, L.A.; Sauers, E.L. Using disablement models and clinical outcomes assessment to enable evidence-based athletic training practice, part I: Disablement models. *J. Athl. Train.* **2008**, *43*, 428–436. [CrossRef]
9. Bacon, C.E.W.; Van Lunen, B.L.; Hankemeier, D.A. Postprofessional Athletic Training Students' Perceptions Concerning the Health Care Competencies. *Athl. Train. Educ. J.* **2018**, *13*, 309–323. [CrossRef]
10. Lam, K.C.; Harrington, K.M.; Cameron, K.L.; Valier, A.R.S. Use of Patient-Reported Outcome Measures in Athletic Training: Common Measures, Selection Considerations, and Practical Barriers. *J. Athl. Train.* **2019**, *54*, 449–458. [CrossRef]
11. Lam, K.C.; Marshall, A.N.; Valier, A.R.S. Patient-Reported Outcome Measures in Sports Medicine: A Concise Resource for Clinicians and Researchers. *J. Athl. Train.* **2020**, *55*, 390–408. [CrossRef]
12. Wilson, C.J.; Eberman, L.E.; Redinger, A.S.; Neil, E.R.; Winkelmann, Z.K. Athletic trainers' viewpoints of patient-centered care: Preliminary findings. *PLoS ONE* **2022**, *17*, e0274577. [CrossRef]
13. World Health Organization. ICF Checklist Version 2.1 a, Clinician Form. 2007. Available online: <http://who.int/classifications/icf/site/checklist/ictchecklist.pdf> (accessed on 23 February 2022).
14. Polit, D.F.; Beck, C.T. The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Res. Nurs. Health* **2006**, *29*, 489–497. [CrossRef]
15. Tzelepis, F.; Sanson-Fisher, R.W.; Zucca, A.C.; Fradgley, E.A. Measuring the quality of patient-centered care: Why patient-reported measures are critical to reliable assessment. *Patient Prefer. Adherence* **2015**, *2015*, 831–835. [CrossRef]
16. Hankemeier, D.A.; Popp, J.K.; Walker, S.E. Familiarity with and Use of Clinical Prediction Rules and Patient-Rated Outcome Measures. *Athl. Train. Sports Health Care* **2017**, *9*, 108–123. [CrossRef]
17. Landon, T.J.; Nay, A.; Connor, A.; Phillips, B.N.; Reyes, A.R.; Leavitt, J. Exploring the Relationship Between Familiarity with the ICF and Rehabilitation Counselor Confidence in Facilitating Workplace Accommodations. *Rehabil. Res. Policy Educ.* **2021**, *35*, 129–142. [CrossRef]
18. Williams, R.M.; Welch, C.E.; Parsons, J.T.; McLeod, T.C.V. Athletic Trainers' Familiarity with and Perceptions of Academic Accommodations in Secondary School Athletes After Sport-Related Concussion. *J. Athl. Train.* **2015**, *50*, 262–269. [CrossRef] [PubMed]
19. Pernambuco, A.P.; Lana, R.D.C.; Polese, J.C. Knowledge and use of the ICF in clinical practice by physiotherapists and occupational therapists of Minas Gerais. *Fisioter. E Pesqui.* **2018**, *25*, 134–142. [CrossRef]
20. Jafri, S.K.; Camargo, O.K.d. Knowledge and use of the international classification of functioning, disability and health (ICF) among health professionals in a developing country. *Pak. J. Neurol. Sci. PjNS* **2020**, *15*, 23–25.
21. Choudhry, N.K.; Fletcher, R.H.; Soumerai, S.B. Systematic Review: The Relationship between Clinical Experience and Quality of Health Care. *Ann. Intern. Med.* **2005**, *142*, 260–273. [CrossRef]
22. Board of Certification. Continuing Professional Certification 2022. Available online: https://bocac.org/newsroom/cpc?category_key=at (accessed on 7 February 2023).
23. World Health Organization. ICF Browser 2017 English Version. Available online: <https://apps.who.int/classifications/icfbrowser/> (accessed on 7 February 2023).
24. Towards a Common Language for Functioning, Disability and Health: ICF, the International Classification of Functioning, Disability and Health [Internet]. The Organization. 2002. Available online: <https://books.google.com/books?id=XWFUAQAACAAJ> (accessed on 7 February 2023).
25. Horn, K.K.; Jennings, S.; Richardson, G.; van Vliet, D.; Hefford, C.; Abbott, J.H. The Patient-Specific Functional Scale: Psychometrics, Clinimetrics, and Application as a Clinical Outcome Measure. *J. Orthop. Sports Phys. Ther.* **2012**, *42*, 30–42. [CrossRef] [PubMed]
26. Baker, R.T.; Burton, D.; Pickering, M.A.; Start, A. Confirmatory Factor Analysis of the Disablement in the Physically Active Scale and Preliminary Testing of Short-Form Versions: A Calibration and Validation Study. *J. Athl. Train.* **2019**, *54*, 302–318. [CrossRef]
27. Nye, E.A.; Crossway, A.; Rogers, S.M.; Games, K.E.; Eberman, L.E. Lesbian, Gay, Bisexual, Transgender, and Queer Patients: Collegiate Athletic Trainers' Perceptions. *J. Athl. Train.* **2019**, *54*, 334–344. [CrossRef] [PubMed]
28. Berkman, L.F. Assessing the physical health effects of social networks and social support. *Annu. Rev. Public Health* **1984**, *5*, 413–432. [CrossRef] [PubMed]
29. Diez Roux, A.V. Investigating neighborhood and area effects on health. *Am. J. Public Health* **2001**, *91*, 1783–1789. [CrossRef] [PubMed]

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