

Exchange of Complementary and Alternative Medical Knowledge in Sport-Related Internet Fora

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This research note provides an explorative analysis of sport-related knowledge exchange about Complementary and Alternative Medicine (CAM) on the Internet. Data are taken from a qualitative content analysis of the largest German-speaking Internet sport portal. Knowledge exchange about CAM in these Internet fora is characterized by the following phenomena: Users expected CAM to improve their performance and discussed a great variety of treatments based on primarily anecdotal knowledge. In addition, two main types of users (helpers and help-seekers) dominated the exchanges. The main reasons for seeking alternative medical help on the Internet were cases of prolonged illness and dissatisfaction with biomedical care.

Cette note de recherche présente une analyse exploratoire de l'échange de connaissances liées au sport et à la médecine complémentaire et alternative (MCA) sur l'Internet. Les données sont tirées d'une analyse qualitative du contenu du plus grand portail sportif en langue allemande sur le web. L'échange de connaissances sur les MCA au sein de ces forums Internet se caractérise par le fait que les utilisateurs s'attendent à ce que la MCA améliore leur performance et discutent d'une grande variété de traitements à partir de connaissances essentiellement anecdotiques. De plus, deux principaux types d'utilisateurs (les aidants et ceux qui demandent de l'aide) ont dominé les échanges. Les raisons principales de la quête d'une aide médicale alternative sur l'Internet sont les cas de maladie de longue durée et l'insatisfaction en regard des soins biomédicaux.

Alternative medical treatments have become increasingly popular worldwide during the last two decades¹. While the growing popularity of Complementary and Alternative Medicine (CAM) is also notable in the field of sport, little is known

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about information sources in this context. The Internet has been identified as one of the most important information sources for CAM use (Diaz et al., 2002; Eysenbach, Sa, & Diepgen, 1999; Miah & Rich, 2008; Schmidt & Ernst, 2004) and it is very convenient for anyone interested in sport to access the Internet (Leonhard, 2009; Wilson & Hayhurst, 2009). However, the role of the Internet as a source of CAM treatments for athletes has been under-examined. Therefore, the aim of this study is to analyze athletes' exchange of CAM knowledge on the Internet. The central issue is that the quality of Internet information is uncontrollable. This lack of information control is particularly relevant for Internet fora, online discussion sites where people have conversations about specific topics in the form of posted messages. Analyses show that almost no quality control rules exist for such fora. Information sources go uncited or are unknown, and any scientific background of information is rarely discussed (Miah & Rich, 2008). Such fora are very popular for health-related topics, and we have chosen to analyze athletes' information exchange of CAM knowledge. In the following research note, we will first present a brief summary of studies about CAM use in sport. Then, we will discuss our methods and present the results of our empirical study.

CAM Use in Sport

In addition to biomedical treatments, the use of CAM has emerged as a daily practice within athletic circles. Athletes frequently use alternative medicine for self-medication and regularly seek advice from alternative medical practitioners who commonly use CAM therapeutic treatments (Theberge, 2008a). Several socio-logical studies have examined the meaning of CAM use in sport. They indicate that a variety of CAM methods are used in sport, but the use of CAM differs between men and women and is further dependent on the social context that facilitates the athletes' CAM use.

Sports physicians and physical therapists often apply therapies and treatments that do not originate from biomedicine. These include such methods as acupuncture, chiropractic, and naturopathy (Bundon, 2008). Nichols and Harrigan (2006) found that intercollegiate student athletes used massage, chiropractic, and Lomilomi (a traditional Hawaiian massage). Pike (2005) reported the usage of "non-orthodox" methods such as osteopathy. Atkinson (2007) found a wide range of "sports supplements"² used by athletes such as "creatine, whey protein, thermogenics, human growth hormone, and testosterone enhancers" (p. 171). Kazemi and Shearer (2008) examined Taekwondo athletes and found that several athletes visited chiropractors and osteopaths. Usichenko, Gizhko, and Wendt (2011) provided a case study in which a modern-pentathlon athlete participated in an acupuncture program.

In addition to differences in CAM methods, previous literature has indicated that the CAM use differs between men and women athletes. In a study of Canadian female elite athletes, Bundon (2008) demonstrated that CAM use is a significant part of their daily training routine. Their usage motives were "an awareness of the popularity of a specific form of treatment with their teammates ... and ... curiosity about a new type of therapy" (p. 51). Pike (2005) also showed in an ethnographic study of female amateur rowers in the United Kingdom that the athletes often resorted to CAM due to a "lack of medical care, ... incompetent diagnoses and over-reliance on drug prescriptions" (p. 201). In this study, female rowers were

more likely to use CAM (59%) compared with males (10%). In general, male athletes seem to use CAM somewhat differently. For example, using figurational sociology Atkinson (2007) analyzed how Canadian male recreational athletes used supplementation. He found that supplement users attributed very high importance to these products, not only for athletic purposes, but also in the pursuit of “masculinity”: For some athletes supplementation for muscle growth was important “in the process of ‘reclaiming’ a lost sense of masculinity” (p. 174).

Finally, previous studies have demonstrated that the social context of high performance sport is conducive to the use of CAM. In this context, performance enhancement tends to override health concerns. For example, Bundon (2008) and Theberge (2008b) demonstrated that all (legal) methods and treatments that promise a positive effect on athletic performance are welcome and result in a balancing act between health and risk. From a sociological perspective, “the meanings associated with health are conditioned by social location” (Theberge, 2008b, p. 207; see also Annandale, 1998). For example, in her study Theberge found that potential health issues—both immediate (e.g., extreme fatigue) and long-term problems (e.g., chronic arthritis)—were considered less important than returning to training as soon as possible. Accordingly, the sport system’s performance logic affects health-related interventions in competitive sports that are not predominantly geared toward healing, but instead to the improvement, or “repair” of performance (Bette & Schimank, 1995; Bishop & Lewith, 2010; Knez & Peake, 2010; Theberge, 2008a; Thiel, Mayer, & Digel, 2010). Several researchers indicated that top athletes tend to focus on achieving peak performance under any circumstances (Bette & Schimank, 1995; Knez & Peake, 2010; Thiel et al., 2010). For instance, illness, injury, pain, and discomfort were only a concern if they adversely affected athletic performance (Mayer & Thiel, 2011). For example, Theberge (2008b) in a sample of Canadian field hockey players, rowers, and wrestlers, found that performance always takes center stage, even if this conflicts with their personal health. This finding is consistent across diverse cultural settings such as Canadian athletes (Theberge, 2007, 2008b), German athletes (Thiel et al., 2010), and athletes from the United States and former communist countries in Eastern Europe (Waddington, 1996).

Because of the performance-based understanding of health (Theberge, 2008b), competitive athletes find themselves in a dilemma. For example, Thiel et al. (2010) observed that “on the one hand, body and psyche are stressed to the limits, yet on the other hand, the long-term sustainment of health is an essential requirement for a long-lasting career” (p. 7)³. This situation tends to undermine the expertise of the treating physician. The athletes often ignore doctors’ recommendations and decide autonomously or in consultation with their coach, whether they play hurt (Malcolm, 2006; Nixon, 1992, 1993; Roderick, Waddington, & Parker, 2000). Similarly, the athletes do not consult the physician about possible CAM treatments and thus, the sport physicians cannot stop this practice for several reasons. First, their decision-making power in relation to athletes is substantially smaller than it is in “normal” doctor-patient relationships (Mayer, & Thiel, 2011; Thiel et al., 2010; see also Malcolm, 2006). Club doctors, for example, often feel pressure from athletes, coaches, and managers in playing-hurt and return-to-play decisions (Waddington, 2006). Second, access to CAM treatments for self-medication and alternative practitioners who offer their services to athletes is not strongly restricted. Third, despite the trend toward “scientization” in sport and the significant role of the biomedical model, “‘magical-mythical’ ... or folk forms of knowledge” still play an important

role in this context (Malcolm, 2011, p. 292). Against this background we assume that the diminished role of physicians also tends to undermine the effectiveness of biomedical knowledge and treatments. As a result, CAM knowledge is evidently becoming more and more important for athletes.

In summary, the sociological analyses indicate the relevance of the social context for both the sport-specific understanding of health and the use of a broad variety of applied treatments. This research has, nevertheless, focused on athletes' experiences with CAM use through ethnographic or interview research within specific sport settings. Not much is currently known about how athletes acquire and exchange CAM *knowledge*. As the Internet is shown to be a primary source for medical self-help activities (Miah & Rich, 2008), it is important to examine how athletes might use it to gain knowledge about CAM remedies. As CAM knowledge exchange increasingly takes place over the Internet (Diaz et al. 2002), the "medicalization of cyberspace" (see Miah & Rich, 2008) provides an almost unlimited access to all kinds of medical and health information or the emergence of many medical services on the Internet. This development is, nevertheless, accompanied by such problems as the quality of information or a lack of Internet regulation, which potentially results in misunderstandings about health and medical applications (Burgermeister, 2004; Miah & Rich, 2008). Knowledge distributed on the Internet—even exclusive professional biomedical knowledge—has the potential to be accessible to everyone (Stichweh, 1997)⁴. Internet exchange is largely characterized by "pseudo-scientifically based", anecdotal knowledge, which is, nevertheless, accepted as equal to professional, medical expertise (Schmidt & Ernst, 2004). Similar to sport contexts, role differentiations and expertise hierarchies are diminished when physicians communicate with patients, patients with patients, or patients with "gurus" (Hardey, 1999; Helman, 2007). The traditional division between the consumer and producer of information also blurs on the Internet. Members of Internet fora or online communities frequently act in a hybrid role as both users and producers of knowledge (Bruns, 2006; see also Cress & Kimmerle, 2008; Kimmerle, Moskaliuk, Cress, & Thiel, 2011; O'Reilly, 2007). The current study examines the kind of knowledge that is exchanged in sport-related Internet fora, the construction of credibility of this knowledge, the extent to which traditional differences between experts and laypeople can be observed in the fora, and what it means for the athletes to take control of their own health.

Method

We examined the course of athletes' CAM-related communication in the form of written contributions on the Internet⁵. More precisely, we analyzed the "threads" in Internet fora: the thematically connected and chronologically (in the form of tree structures) organized sequences of discussion contributions. In each thread, all contributions (excluding the first one) include references to a previous message.

We selected the German online sports portal www.netzathleten.de for the database. This portal is the largest German-speaking sports portal on the Internet: in July 2011 it had 5.74 million users. We chose all health-related fora within this portal for our analysis (i.e., "sport nutrition", "sport injury", and "health and sport") and included all threads in which direct or indirect mentions of CAM were made. To identify CAM-related threads, we used a list of CAM treatments and

remedies based on a characterization by the National Center for Complementary and Alternative Medicine (<http://nccam.nih.gov/health/whatisacam>). We filtered the communication within the analyzed threads using this list, which enabled us to create a cross-section of the material and conduct the evaluation (Flick, 1998; Mayring, 2002).

We carried out the thread selection on July 8, 2010. Our analysis therefore comprises all ascertainable communications about CAM in these fora before this date⁶. A total of 134 threads were documented in the three selected subject fora. As Table 1 shows, 104 threads were rejected: sequential contributions without answers ($n = 33$), those without any medical basis ($n = 15$), and those without any CAM basis ($n = 56$). The remaining 30 threads were systematically evaluated using a computer-aided qualitative data analysis program, MAXQDA¹⁰.

We first differentiated the material depending on the dimension of CAM knowledge exchange. Here, we used a trimodal schema of dimensions (factual, social, and temporal dimension) to categorize our data (Luhmann, 1995; Schützeichel, 2003). The factual dimension included the subject matter of the communicated topics. The social dimension included the forum visitors' roles and social relationships. The temporal dimension focused on time frames for illness careers or therapies. Following Mayring (2002), we then bundled CAM-related topics and themes into several subcategories to complete the category system for our analysis (Table 2).

Table 1 Database

	Total Threads	Threads with a minimum of one answer	Threads with a minimum of one answer and reference to medicine in general	Analyzed Threads (minimum of one answer and reference to CAM)
Forum "health and sport"	34	24	18	7
Forum "sport nutrition"	25	21	17	9
Forum "sport injuries"	75	56	51	14
Total	134	101	86	30

Table 2 Category System of the Analysis

Category	<i>Factual dimension</i>	<i>Social dimension</i>	<i>Temporal dimension</i>
Subcategory	<ul style="list-style-type: none"> • Forms of knowledge • Expectations • Discussed treatments 	<ul style="list-style-type: none"> • Types of users • Cross-linking with biomedicine 	<ul style="list-style-type: none"> • Treatment time frames • Illness and therapy lengths

Results

While CAM was a relevant topic in sport-related Internet fora, we found no controversial debates about the scientific background of the discussed CAM treatments and their effectiveness. As indicated by the previous research on athletes' experiences with CAM, athletes who participate in these fora seem to be primarily interested in how to improve their athletic performance.

Factual Dimension

Forms of Knowledge. In most cases, experience or hearsay established the users' knowledge about the effectiveness of CAM treatments and thus, anecdotal advice-based knowledge was the dominant "knowledge form" given to forum members. Other athletes' opinions and experiences were, thus, an important basis for decision making, for example, with impending surgery or concrete therapy proposals from physicians:

Has maybe anyone here had a knee operation where the kneecap is "misplaced"? I am 16 years old and have played competitive volleyball for approximately seven years and for about five years now, have had problems with both knees (first with the right one, now also the left). I have already been to many orthopedists, sports doctors, etc., but most of them think that it's a growth problem, that the ligaments are too long ... doctor most likely wants to perform surgery.

Similar to the athletes in previous studies (e.g., Pike, 2005), this questioner obtained diagnostic advice from the other forum members due to an underlying mistrust in medical expertise and dissatisfaction with the communication behavior of physicians. Mistrust of biomedicine, which is common within the CAM communication on the Internet (Schmidt & Ernst, 2004), appeared typical for the sport-related CAM knowledge exchange.

The advice given by the forum members differed depending on a professional or an athletic background of the Internet user. We found recommendations based on subjective theories constructed from individual experiences in competitive sport: "Personally, I only take protein supplementation ... I absolutely cannot recommend L-carnitine, I have already tried it too ... I am completely dissatisfied with it." The advisors used personal experiences as evidence to support their advice. These anecdotes were sometimes supported with scientific or pseudo-scientific knowledge to make their advice appear more credible (Shermer, 1997). The same strategy was used in some advisors' attempts to act as a "proxy knower." Here, the personal recommendation was not based on individual experience, but instead was based on other "authoritative" sources of knowledge, such as statements from a physician, an "expert knower." This strategy of referring to a professional expert presents a paradox: The mass media of modern society with their widespread knowledge distribution have led to a demystification of the medical profession's exclusive knowledge (Stichweh, 1997), yet the profession is still used as an authority in cases of uncertainty. In this particular case of offering second-hand information from an expert, the strategy has the function of presenting a claim in a way that appears scientific, although there is no solid supporting evidence. For example, one user stated: "And according to them it was created in cooperation with an Institute for

Sport Science,” suggesting that the involvement of an Institute in itself legitimizes the recommendation (for a discussion on the power of physicians and the biomedical model see Annandale, 1998; Gatchel & Oordt, 2003).

In special advice cases, the knowledge was claimed to be based on both personal experience with certain treatments and on being an expert in the appropriate technology. Such remarks had an especially strong authoritative force. Just as in the case of a “proxy knower,” these statements represented a form of communicative trick: They functioned as “killer phrases” that impeded any further discussions about the advantages and disadvantages of the recommended methods. One user stated, for example: “I know firsthand, I’m a BowTech practitioner myself.”

Expectations. Our analysis demonstrated that within the Internet fora, expected enhancements of performance motivated the demand for CAM in sport contexts. The users tended to use CAM treatments for the purposes of regeneration, maintenance, and the advancement of athletic performance. They reported that they aimed at exploiting CAM methods to optimize the effects of training, achieve better mental and physical fitness, and facilitate recovery. This observation is in line with Theberge’s (2007, 2008b) findings that for many athletes performance is crucial (albeit in conflict with their individual health). The following athlete statement illustrates this point:

I also use dietary supplements, for example, I take magnesium compounds because they guard against cramping and the like, and also vitamin tablets ... It is difficult to provide for sufficient supplementation through normal means if one is so often at the limits of performance during the season.

The fora visitors discussed the substitution and supplementation process of “lost substances” as an important prerequisite for reentry into training and competition after injuries or illness: “I have already heard from several athletes that this extract has helped them, especially in getting back on their feet in case of sustaining injuries or after long periods of weakness.” On the surface, the information was requested to prevent illness, specifically to stay healthy using CAM. However, a more detailed analysis showed that the motivation of conquering everyday illnesses was almost always unlimited athletic ability. Similar to the recreational athletes in Atkinson’s (2007) study, artificial supplements were commonly used to combat various sport-related deficiencies. In the Internet fora, supplementation was important for a sport-related loss of mineral nutrients and self-diagnosed inflammations and common colds. Usually, diseases were considered only as hindering athletic performance and therefore, requiring treatment: “Since I not only take an antibiotic against bacterial infections, but also take vitamin D as a supplement, I feel considerably better and I think that in April, I can run my next marathon.” The suspicion of deficiencies, combined with the assumption that such deficiencies could negatively influence athletic performance, were sufficient enough to motivate mineral and vitamin substitutions: “I am a vegetarian and therefore, I could have several nutrient deficiencies. Because of this I take A to Zinc tablets, which contain everything, and I also take creatine for more strength and protein powder to increase muscle size.”

Discussed Treatments. CAM includes a heterogeneous collection of various healing arts and therapies. For the purpose of our discussion, the treatments can

be differentiated into *physical-therapeutic*, *dietary-therapeutic*, *pharmaceutical-biological*, *movement-therapeutic*, *psycho-spiritual-therapeutic*, and *energy-therapeutic* CAM treatments (Bielory, 2004; Köntopp, 2004; see Table 3 for more detailed explanations of the types of CAM).

Fora visitors frequently discussed *physical-therapeutic* and *dietary-therapeutic* treatments within the analyzed threads. Inquiries about *pharmaceutical-biological* treatments were much rarer; we found only discussions about homeopathic medicines, Schüssler cell salts, and traditional home remedies. *Movement-therapeutic*, *psycho-spiritual-therapeutic*, and *energy-therapeutic* treatments were only discussed in isolated cases (Table 3). There was also a noticeable difference between nonsport CAM fora (see, e.g., Kimmerle, Abels et al., 2011) and sport-related CAM fora on the Internet in their discussions about treatments. This difference could possibly be attributed to the fact that the expectation of optimal functionality dominates the athletes' interests and leads them to prefer "sport-tested" methods.

Table 3 CAM Treatments Mentioned in the Analyzed Threads

Type of treatment	Treatment
Physical-therapeutic	<ul style="list-style-type: none"> • Golgi-Therapy • Bowtech • Cyriax • Kinesiotaping/ Meditaping • Chiropractic • Sauna • MET (according to Knop)
Dietary-therapeutic	<p><i>Dietary Supplements</i></p> <ul style="list-style-type: none"> • Single alimentary elements: vitamins, amino acids/proteins, mineral nutrients • Special supplement products: Juice PLUS, AMSport, Frubise Sport, Isostar, Noni, Lyprinol <p><i>Diet products</i></p> <ul style="list-style-type: none"> • JuicePLUS • Amapur <p><i>Sport nutrition</i></p> <ul style="list-style-type: none"> • Sports gels • Powerbars
Pharmaceutical-biological	<ul style="list-style-type: none"> • Homeopathy • Schüssler cell salts • Home remedies
Movement-therapeutic	<ul style="list-style-type: none"> • Fitvibe-Trainer
Psycho-spiritual-therapeutic	<ul style="list-style-type: none"> • EFT (mental training)
Energy-therapeutic	<ul style="list-style-type: none"> • Kinesiology/kinesiological muscle test

Commercially distributed *physical-therapeutic* treatments that promised a “holistic treatment” for nonspecified “imbalances” were common: “You can try the special Australian technique, which activates the self-healing system, and with that, the possibility that the body will find its balance again ... The technique is called BOWTECH.” Such treatments for a “balanced” body appeared universally effective in contrast to biomedicine.

Most discussions of the *dietary-therapeutic* treatment methods dealt with the products athletes should use, for example, as optimal preparation for a marathon. Body weight monitoring and the dietary use of weight-regulating products and dietary supplements were common topics. Substitution and supplement products were assumed to contribute to the athletes’ fitness: “In addition to a well-balanced diet, I eat fruit, vegetable and berry capsules from Juice Plus+.” We next examine who provided different types of advice in these Internet fora.

Social Dimension

Types of Users. We identified two main types of users: the “help seeker” and the “helper” (Table 4)⁷.

The help-seekers only solicited opinions and advice. This group can be divided to members based on who reported experiences with the specified therapy or background of illness or injury in question. Some of the group had previously sought assistance outside the Internet, and for others the forum contribution was their first request for advice. The first time help-seekers suffered from what they considered unexplainable pain or medical conditions that they considered not yet severe enough to contact a physician. The help-seeking group with previous therapeutic experience reported they had sought official consultations and treatments from physicians but had been unsuccessful:

I am beginning to trust my doctors less and less ... On Nov. 11, '07, I tore my ligament during a handball game. The doctor said all ligaments were torn apart ... I was always allowed to do sport and to start training again ... now, one day later, on Tuesday, nothing was bruised but everything surrounding my ankle was swollen. What can I do and what could that mean?

Table 4 Types of Users

The help seeker	The helper
With/without formal consultation	Systematic/singular contact
• The help seeker without experience	• The referring helper
• The help seeker with experience	• The self-acting helper
	The professional helper
	→ Special type of the self-acting helper
	→ Priority on qualification
	→ Interaction among each other

The requests from the help seekers with therapeutic experience often included downright dramatic descriptions of their particular tale of woe and/or their desperate situation: "I have also truly tried everything ... I hope you can help me!!" Our general findings regarding the "helper" group support the assumption that expert-lay differentiations are leveling out both in health-related Internet fora and in CAM (see Hardey, 1999; Helman, 2007; Stichweh, 1997). We found different subtypes in the helper group. One subtype, which we call the "self-acting helper," gave those seeking help concrete advice and explanations. The "referring helpers," in contrast, named sources of knowledge where advice could be found: names, physicians' addresses, or informative Internet sites. Some users within the "self-acting helpers" group limited themselves to one-time responses to concrete inquiries in which the description of their own (successful) story about overcoming the illness/injury was in the foreground. The other "self-acting helpers"—people with apparently a lot of self-help experience—addressed the problems of those appealing for longer-term help:

So I try to protect myself against colds by eating healthy, being outdoorsy and drinking a lot of fluids. If I still catch a cold, I like to use Grandma's cough remedy: black radish with rock candy. Simply hollow out a radish, put rock candy into it overnight, cover it and take out the juice the next morning ... it really works miracles against coughing!!!

In their communication, the self-experienced helpers posed targeted questions, made diagnoses, and proposed concrete measures.

The "self-acting helper" groups also included a special subtype which we label the "professional helper" who attempted to reestablish, through communication, the traditional professional-client relationship. The people who acted as "professional helpers" on the Internet claimed to be physicians or people who practiced another healing occupation in their professional life. In contrast to the "normal" "self-acting helper," whose margin of knowledge was founded in personal experiences, the "professional helpers" openly claimed their medical professional qualifications in their very first contribution. The accuracy of the professional's advice was therefore demonstrated in a similar form as the doctor-patient relationships outside the Internet. Sometimes, "professional helpers" also emerged as "proxy knowers." In this role, they referred to colleagues, in particular, to medical specialists. In several threads, we observed two professionals who regularly referred to each other in their roles as physicians to amplify their authority when making their diagnoses and therapy suggestions: "I agree with [name]. What you describe here corresponds to the classic image of a so-called chondroпатия patella [Chondromalacia patellae]."

In our analysis, the interaction between the claimed physicians and inquiring athletes possessed a sport-specific characteristic not found in conventional patient-doctor relationships. To validate their expertise, the physicians referred, in addition to their educational credentials, their own successful athletic experiences: "Conclusion: strain is strictly forbidden I know both from my medical practice (as a general and sports medicine doctor) as well as from my life as a runner (personally 1,371 marathons/ultramarathons)." As Malcolm (2011) indicated, subcultural logic systems of sport "are often providing greater explanatory purchase than external "scientific" modes of thought" (Malcolm, 2011, p. 292). Obviously, it is important

that users believe the professional advice, but in sport-related context this was validated through sport-related success rather than medical credentials.

Cross-Linking with Biomedicine. Another sport-specific characteristic found was the linking of CAM offers with biomedical treatment methods. The help seekers were ready to try anything available that promised to restore their athletic performance. Referrals to the professional healthcare system's biomedical support depended on the severity of the injury or illness. If alternative methods and self-medication did not improve small mental problems, nutrition, or common sport injuries like strains, the user was referred to the professional healthcare system and/or biomedical treatments: "The best tactic is normally to immobilize ... after 6 weeks, at the latest, I would go to the doctor." Helpers also recommended professional healthcare system (e.g., doctor's offices, surgeries) with severe problems: "However, I can only strongly advise you, both from professional as well as personal experience, to not take this medical condition too lightly, and instead consult a doctor from the beginning." In contrast, "professional helpers" who claimed a CAM background referred to their own homepages rather than to the professional healthcare system, and in rare cases, offered personal treatment. In these cases, the professional healthcare system was mentioned with the intention of discrediting the expertise of orthodox medical doctors and to advise seeking out a holistically oriented physiotherapist or a skilled CAM-method healer: "In any case, you should look for a competent therapist. Preferably not an orthopedist, but instead a therapist, so someone who also knows what to do and does not only charge for taking little pictures."

Our analysis showed that the users primarily inquired into alternative, non-orthodox treatments when they had previously experienced biomedical treatment, and/or the behavior of the treating physician, as unsatisfactory. In many of these discussions, time aspects played an influential role in a disappointing situation.

Temporal Dimension

Treatment Time Frames. The functionality aspect of CAM use is also observable regarding the discussed treatment time frames. In contrast to holistic beliefs in the effectiveness of long-term CAM use in the normal population, athletes often reported using CAM during their training for competition: "I also use supplementation ... but only during the season." Exact details about the time of the diagnosis, the duration of illness or injury, and/or the length of the treatment period of biomedical treatments were given. Such details were mostly unclear in the communications about CAM practices such as the therapeutic effects of alternative nourishment or the effects of integrated products or treatments like power balance bracelets. For example, the time frame of effects of dietary supplements was nonspecifically linked with the time frame of intake. Accordingly, forum members more commonly used words like "after" or "before," without an explicit specification of days, months, or years: "A friend of mine used creatine for muscle enhancement and thus scored good results. But he also says that they disappear after taking them no longer." The most specific information about how long an intervention should be used before it shows an effect was the term "quickly:" "That's a guaranteed effective thing and you'll get rid of your complaints quickly. I promise it." These lacking time specifications for CAM treatments stands in interesting contrast to the frequent complaint that

physicians gave unclear time specifications, especially when dealing with injuries, which created frustration: “The only thing is really that I was at the surgeon’s and he only said that it needs time to heal.”

Physicians were expected to give exact diagnoses and clear time specifications regarding the healing process and concrete details about therapeutic mediums. When physicians did not fulfill these expectations, help seekers then often turned to CAM, from which, paradoxically, such firm specifications were not expected. Similar phenomena were reported for cases when the time specifications given by physicians did not coincide with the actual healing process: “I don’t trust my doctors any more... The doctor tells me only that this was normal and fine. But to me, it does not look so good.”

Illness and Therapy Lengths

In our analysis, the forum members’ illness careers could be grasped only through statements about the causes of why aid was sought. Here, some athletes with minor medical conditions asked for an initial diagnosis about the potential causes and duration of injuries. Advice was sought before a physician was consulted, or help seekers attempted to obtain a quick diagnosis due to a lack of time: “Since I don’t have much time, I haven’t seen a doctor and wanted to listen to what you suppose, might be the cause.”

Similar to athletes in Pike’s (2005) study, the forum visitors with serious injuries who had to accept long term interventions often mistrusted physicians’ abilities. Most of those who sought advice regarding illness and therapy lengths revealed continuing case histories that also included consultations with a physician, and possibly another therapist:

I have been to numerous orthopedics/sports doctors, etc., have had numerous treatments. ... Nothing could ease the pain or achieve an improvement, and after all this time, there is just total disappointment and hopelessness. Maybe someone here has had a successful therapy.

The time element of injuries seemed to always represent periods of suffering (for the importance of subjective perceptions of the temporal dimension of injury and rehabilitation see Allan-Collinson, 2003). In the Internet fora, help seekers searched for explanations for the cause of pain after long periods of suffering: “I have since visited different doctors and physiotherapists, but still do not know the actual cause of the problem.” Long suffering also caused help seekers to mistrust their physicians’ statements. The users considered it essential to get an alternative opinion before undertaking a concrete biomedical intervention: “I would appreciate it if someone could say something to this. Namely, I am quite afraid that the OPs [surgeries] will be pointless, or that I could get even more problems.”

Conclusions

This explorative analysis focused on the structure and processes of CAM knowledge exchanges on the Internet. The results show that there is an active exchange of knowledge about CAM usage in sport. Based on our analysis, the Internet functions

mostly to provide additional information beyond the medical advice given by doctors, physiotherapists, or coaches. The forum visitors in our study simultaneously used multiple forms of therapies, both biomedical and nonbiomedical. In contrast to the average CAM user outside of sport systems (Eisenberg et al., 1998), athletes primarily used CAM to maintain or enhance performance. It was quite clear that their understanding of health was determined by the special social location of sport (Annandale, 1998; Theberge, 2008b): the performance-related goals seem to superimpose broader health concerns. In addition, there was no critique of CAM remedies, which often characterize non-sport-related Internet discussions about CAM (Schmidt & Ernst, 2004). According to the forum contributions, the choice of medical interventions and remedies was rather eclectic to fulfill the demands of the sport system further indicating that medical care in sport is “directly concerned with improving performance” (Theberge, 2007, p. 176). Similar to Pike’s (2005) finding, a perceived lack of conventional medical care was also an important reason for asking for CAM. Athletes often sought CAM-related help in Internet fora when they perceived biomedical support as insufficient. CAM-related help-seeking in these sport fora was highly motivated by disappointments with doctors’ promises regarding injury lengths, frustrations about discrepancies between the factual and the promised healing processes, and inadequate time factors in treatments by biomedical doctors. Lastly, we found that other athletes’ anecdotal knowledge seemed to have a higher credibility than the scientific knowledge of physicians who have no experience in the field of competitive sport.

Hence, both lack of medical care and dissatisfaction with biomedical treatments for sport purposes were driving factors for inquiring about CAM information and seeking help on the Internet. We can conclude that CAM becomes attractive when biomedical care does not adequately meet the athletes’ functional performance-related needs. Furthermore, athletes sought alternative solutions to their problems because, from their perspective, biomedicine appeared to be too restricted, not least because of physicians’ unclear diagnoses. The users also seemed to want to be independent of the “authoritarian” nature of professional medicine and have more autonomy. However, this requirement was undermined, in part, as some users who claimed to be physicians attempted to reestablish a typical professional-client (doctor-patient) relationship in the fora. Malcolm (2011) indicated that the treatments’ scientific verifiability played a rather insignificant role for athletes. They trusted other athletes’ experiences and knowledge of what would help restore athletic capacity rather than medical expertise. When combined with athletic experience, however, biomedicine served to restore some its credibility as the dominant health knowledge.

Our methodology, nevertheless, had several limitations. We do not know much about sociodemographic background of the users or their motivations and intentions and thus, it is difficult to assess if these users were representative of the athletic population. In some cases, people’s characteristics or objectives can be determined based on their contributions in a forum, but—and this is another important constraint of our method—we can never be sure whether they really communicate their real personal objectives or motives. Finally, it remains unclear in what way communication in the fora had an impact on athlete’s actual behavior. Future studies could, for example, allow for a more accurate collection of sociodemographical data. In addition, they could try to capture how the users apply fora communication and

CAM information from the Internet in their daily life and implement it in their training and sport competitions.

Notes

1. Although there are differences regarding the acceptance of CAM by health insurance (companies) and health organizations in different countries, studies from the USA (Eisenberg et al., 1998; Goldbeck-Wood et al., 1996) and Germany (Institut für Demoskopie Allensbach, 2002; 2009) report a similar increase in the popularity of CAM. In the German healthcare system, for example, the spread of CAM methods has been spurred by the fact that some methods such as homeopathy are not obligated to prove their effectiveness (for some characteristics of the healthcare system in Germany, see Kuhlmann, Allsop, & Saks, 2009).
2. Dietary supplements that are not medically indicated (in contrast, for example, to the intake of iron in the case of an iron deficiency) are considered as CAM (see National Center for Complementary and Alternative Medicine: <http://nccam.nih.gov/health/whatisacam>) as neither their necessity nor their effectiveness is empirically proven. Following Atkinson (2007), the usage of dietary supplements will be called supplementation in the remainder of this text.
3. The authors translated all citations which were originally written in German.
4. Some people are still excluded from using the Internet (due to financial reasons or a lack of media literacy). In Germany, the number of these individuals is negligible (e.g., in 2008, 87% of the German population between 14 and 29 years had access to the Internet, <http://www.digitale-chancen.de/content/stories/index.cfm/aus.2/key.2623/secid.11/secid2.33>).
5. Examining contributions on the Internet comes along with a variety of difficulties that the reader should keep in mind while inspecting the results: First, we cannot know how representative of the entire population of athletes the forum users are, so the findings cannot necessarily be generalized to all athletes. But since we have conducted a comprehensive survey of the health-related fora in this Internet portal, our findings can at least be assumed to be characteristic for the users of these fora. Second, we cannot know how honest the users are. For example, it is possible that a person uses various accounts and communicates with her-/himself or a user might pretend to be something (e.g., a sport physician) which s/he actually is not. Lastly, we cannot evaluate to what extent advice provided on the Internet is put into practice by the users. These issues of representativeness/generalizability, veracity, and real-world impact are general problems in Internet research that can never be solved completely, but which one has to be aware of (see Joinson, McKenna, Postmes, & Reips, 2007).
6. The first relevant contribution was dated January 16, 2008.
7. Users who vilified help seekers were an exception in this analysis.

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