

# Scientific Evidence and Consumer Psychology Research for DTC Sports Nutrition E-commerce (Myprotein)

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## Abstract

This report synthesizes peer-reviewed evidence relevant to conversion behavior in direct-to-consumer (DTC) sports nutrition and dietary supplements sold via e-commerce. The focus is consumer decision psychology for ingestible, repeat-purchase products (protein powders, performance supplements, vitamins, and nutrition snacks), with emphasis on online trust, perceived risk, promotions, sensory expectations (taste/mixability), electronic word-of-mouth, and choice architecture. Evidence is structured into actionable themes with study designs (meta-analyses, systematic reviews, experiments, and observational studies) and key quantitative data points where reliably established in the literature (e.g., protein-dose response for resistance training outcomes; global lactose malabsorption prevalence; habit formation timescales). Findings are translated into empirically grounded CRO hypotheses appropriate for German and international e-commerce contexts, while explicitly separating scientific evidence from internal, non-peer-reviewed brand observations.

## 1 Brand Summary (Industry, Niche, Core Offer)

### 1.1 Industry and niche classification

- **Primary industry:** Health & Wellness retail; e-commerce consumer packaged goods (CPG) with ingestible, health-adjacent products.
- **Niche:** DTC sports nutrition and dietary supplements, optimized for **frequent replenishment** and **performance/physique goals**.
- **Risk class (behavioral):** Medium involvement with elevated **perceived bodily risk** due to ingestion (relative to non-ingestible FMCG), leading to stronger reliance on trust cues, diagnostic information, and social proof.

### 1.2 Key product lines and attributes (as provided)

- **Protein powders:** whey-based (e.g., concentrates/isolates) and plant-based options, multiple flavors and formats (including “clear” formats).
- **Performance supplements:** e.g., creatine and other ergogenic aids.
- **Vitamins and health supplements:** routine health positioning.
- **Nutrition snacks:** protein bars/snacks that combine functional benefits with hedonic taste expectations.
- **Ancillary categories:** fitness accessories; limited activewear.

### 1.3 Target audience and primary purchase logic (as provided)

- **Core audience:** gym-goers, athletes, and active lifestyle consumers.
- **Psychographic emphasis:** value-conscious, convenience-driven, goal-oriented shoppers.
- **Commerce model:** international e-commerce with frequent promotions; DTC economics support wide assortment and recurring campaigns.

### 1.4 Unique selling propositions (USPs) inferred from provided description

- Broad range of products and flavors, enabling self-customization and routine building.
- Value-oriented pricing with frequent promotions (deal-seeking compatibility).
- DTC availability and repeat buying potential (subscriptions or habitual replenishment behavior).

### 1.5 Scope note (data provenance)

The brand characterization above uses the user-provided summary. No claims in this report depend on subjective evaluation of website design or user flow. Any mention of potential CRO applications is grounded in peer-reviewed behavioral evidence and framed as testable hypotheses rather than assertions about the current site.

## 2 Research Approach and Inclusion Criteria

### 2.1 Evidence sources and filtering logic

- **Preferred evidence types:** meta-analyses, systematic reviews, randomized experiments (lab/field), and large observational studies.
- **Databases typically used for this topic:** PubMed, Google Scholar, ScienceDirect, JSTOR, and related publisher archives (used conceptually to define inclusion standards).
- **Time prioritization:** emphasis on the last 10–15 years where possible, while including select foundational constructs when needed to interpret modern e-commerce behavior.
- **Domain focus:** consumer psychology and behavioral decision-making in e-commerce, health products, supplements, and food-like products with strong sensory evaluation.

### 2.2 Interpretation principle

Because supplement e-commerce combines **health-risk cognition** with **retail heuristics**, the most predictive evidence often comes from adjacent literatures:

- online trust and perceived risk,
- e-service quality and fulfillment reliability,
- promotion and price fairness,
- sensory expectation and repeated consumption,
- electronic word-of-mouth (eWOM) and reviews,
- choice overload and decision aids,
- motivation and habit formation in health behaviors.

### 3 Key Findings Grouped by Theme (with Methodologies and Data Points)

#### 3.1 Theme A: Trust, perceived risk, and the “ingestion premium” in online conversion

##### What the evidence indicates

- In e-commerce, **trust is a central mediator** linking site cues (information quality, security, reputation signals) to purchase intention and actual purchase behavior. Meta-analytic work on online trust shows consistently strong associations between trust and purchase-relevant outcomes, and negative associations between perceived risk and purchase.
- For ingestible products, consumer decision-making is systematically more sensitive to:
  - **integrity cues** (tamper evidence, authenticity, batch consistency),
  - **information diagnosticity** (ingredients, allergens, label accuracy),
  - **institutional assurances** (credible policies, third-party testing, traceability).
- In this category, conversion failure is frequently a risk-management failure: consumers avoid committing when they cannot cheaply verify safety, authenticity, and “what happens if something goes wrong.”

##### Representative methodologies and findings

- **Meta-analysis (e-commerce trust):** Kim and Peterson (2017) aggregate empirical studies of online trust relationships and show robust, practically meaningful effects of trust on purchase intention and related outcomes across e-commerce settings.
- **Experimental and observational evidence (policy assurance):** Return policy leniency has been shown to increase purchase intention and spending in online retail settings, partly by reducing perceived risk and increasing perceived fairness; however, ingestible categories often have restrictions that require alternative reassurance mechanisms (e.g., clarity on unopened returns, defect handling, and integrity guarantees).

##### CRO-relevant implications for sports nutrition

- “Trust layers” that are unusually diagnostic for supplements:
  - ingredient and allergen transparency with consistent on-pack parity,
  - explicit integrity cues (tamper-evident packaging explanation; what to do if seal is broken),
  - third-party testing and certification where applicable (communicated precisely, not as vague badges),
  - clear defect-resolution pathways (fast, predictable steps).
- Behavioral expectation: when risk is salient, users exhibit **verification behaviors** (scrolling for ingredients, scanning reviews for adverse reactions, checking delivery and returns). Reducing the cost of verification should increase add-to-cart and checkout completion.

### 3.2 Theme B: Fulfillment reliability (delivery) as e-service quality and a conversion determinant

#### What the evidence indicates

- E-service quality research consistently identifies **fulfillment** (delivering the right item, on time, reliably) as a key driver of satisfaction and loyalty in online retail.
- In categories with routine replenishment (protein, creatine, vitamins), shipping reliability functions as:
  - a functional utility driver (avoid running out),
  - a trust signal (competence and accountability),
  - a negative amplifier when failures occur (anger and switching).

#### Representative methodologies and findings

- **Meta-analytic review (e-service quality):** Blut et al. (2015) synthesize e-service quality research and underscore that fulfillment and reliability dimensions are consistently associated with customer satisfaction and loyalty-related outcomes in online commerce.
- **Experimental framing implication:** Reliability cues reduce uncertainty, and uncertainty increases abandonment under time pressure (a common state in replenishment purchasing). While many studies are not supplement-specific, the mechanism is domain-general: reduce uncertainty at the point of commitment.

#### CRO-relevant implications for sports nutrition

- Make fulfillment a **product-level benefit**, not only a checkout detail:
  - precise delivery windows (date ranges rather than vague “standard”),
  - tracked delivery explanation and proof standards,
  - contingencies: what is the process if “marked delivered” but missing.
- Hypothesis structure for testing:
  - Intervention increases **perceived control** and decreases **perceived risk** → higher checkout completion.

### 3.3 Theme C: Promotions, reference prices, and trust erosion via perceived “promo complexity”

#### What the evidence indicates

- Sales promotions generally increase short-term purchase probability and unit sales, but can produce:
  - lower perceived price fairness when consumers infer manipulation,
  - reduced trust when redemption feels effortful or error-prone,
  - learned deal-seeking (waiting for discounts), affecting baseline conversion.
- Scarcity and urgency messages can be effective, but can also backfire if consumers interpret them as artificial or inconsistent with observed pricing patterns.

## Representative methodologies and findings

- **Meta-analysis (sales promotions):** Santini et al. (2016) review promotional effects on consumer behavior, showing that promotions reliably influence purchase-related outcomes, with variability depending on promotion type and context.
- **Controlled experiments (scarcity):** Aggarwal et al. (2011) demonstrate that scarcity messages increase perceived value and purchase intention, with mechanisms depending on scarcity framing (demand-based vs supply-based) and consumer interpretation.

## CRO-relevant implications for sports nutrition

- In supplement e-commerce, promotions interact with trust because the products are ingested and often repurchased:
  - If discounts are perceived as “tricky,” consumers infer broader untrustworthiness (generalization from price fairness to product integrity).
- Evidence-consistent hypotheses:
  - reduce redemption effort (automatic application) to raise conversion,
  - increase auditability (clear savings breakdown) to maintain fairness perceptions,
  - constrain urgency to credible contexts (time-bound events with transparent rules).

## 3.4 Theme D: Sensory expectations (taste, sweetness, mixability) as the retention gate for habitual ingestibles

### What the evidence indicates

- For products consumed repeatedly, **sensory experience drives adherence**, and adherence drives long-run value. Consumer decision-making therefore prioritizes:
  - taste expectation accuracy (avoid disappointment),
  - texture/mouthfeel expectations (e.g., chalky/gritty/foamy),
  - physiological comfort expectations (bloating, lactose intolerance, sweetener sensitivity).
- Extrinsic cues (descriptions, imagery, flavor naming) shape taste expectations and can influence experienced taste via expectation assimilation mechanisms, especially when consumers lack prior experience.

## Representative methodologies and findings

- **Review (sensory expectations):** Piqueras-Fiszman and Spence (2015) review how extrinsic cues shape sensory expectations and downstream liking, highlighting the importance of accurate, diagnostic cues in pre-consumption evaluation.
- **Experiment (visual depiction and mental simulation):** Elder and Krishna (2012) show that imagery and product orientation can facilitate embodied mental simulation, influencing product evaluations. In food-like categories, this supports the principle that sensory-descriptive assets can reduce uncertainty, but must remain credible to avoid disconfirmation.
- **Systematic review and meta-analysis (lactose malabsorption prevalence):** Storhaug et al. (2017) estimate adult lactose malabsorption prevalence globally at approximately 68%, with strong regional variation, supporting the business relevance of lactose-free or low-lactose options and unambiguous labeling.

## CRO-relevant implications for sports nutrition

- Evidence-consistent mechanisms to reduce taste risk:
  - structured taste descriptors (sweetness intensity; “creamy” vs “clear/refreshing”),
  - flavor-level review filtering (increase diagnosticity),
  - “try-first” options (sample packs/variety packs) as risk-reducing commitment devices.
- Physiological comfort is not a niche concern:
  - lactose malabsorption prevalence implies that a non-trivial share of consumers may attribute discomfort to “the protein” unless clear guidance differentiates lactose-related symptoms and offers alternatives.

## 3.5 Theme E: Goal progress beliefs, efficacy evidence, and “results” as a credibility constraint

### What the evidence indicates

- Sports nutrition purchasing is partly a **belief-driven investment** in goal progress (muscle gain, recovery, satiety/weight management).
- When consumers can map a product to a credible mechanism and an appropriate dose, perceived efficacy increases, skepticism decreases, and choice becomes easier.

### Representative methodologies and findings

- **Systematic review, meta-analysis, meta-regression (protein supplementation and resistance training):** Morton et al. (2018) report that protein supplementation increases resistance training-induced gains in fat-free mass and strength, and identify a dose-response pattern with daily protein intake around 1.6 g/kg/day (with an upper confidence boundary near 2.2 g/kg/day) as a point of diminishing returns for many trainees.

## CRO-relevant implications for sports nutrition

- Practical outcome framing can be made more credible by:
  - serving math tools (“how many scoops to reach X g/day based on bodyweight”),
  - use-case framing aligned to routines (post-workout, breakfast protein gap, travel),
  - transparent claim boundaries (avoid overpromising).
- CRO hypothesis: lowering the cognitive cost of “will this work for me?” increases conversion, especially for first-time buyers and switchers.

## 3.6 Theme F: Electronic word-of-mouth (reviews), diagnosticity, and negativity sensitivity

### What the evidence indicates

- Online reviews influence sales and conversion because they substitute for direct experience, especially under uncertainty.
- eWOM effects scale with:
  - perceived diagnosticity (specific, attribute-linked content),
  - credibility cues (verified purchase, volume, consistency),
  - negativity sensitivity (bad outcomes weigh heavily when risk is high).

## Representative methodologies and findings

- **Meta-analysis (eWOM impact):** You et al. (2015) quantify eWOM’s influence on product performance outcomes across contexts, supporting the general claim that review valence and volume can materially influence consumer choice, especially when consumers face uncertainty and low direct verifiability.

## CRO-relevant implications for sports nutrition

- For supplements, the most diagnostic review clusters are typically:
  - taste and sweetness (sensory fit),
  - mixability (effort cost),
  - physiological comfort (bloating, tolerance),
  - delivery and integrity outcomes (trust).
- Evidence-consistent review presentation:
  - highlight attribute-filtered snippets near the decision point,
  - increase diagnosticity by mapping review content to the currently selected variant/ flavor.

## 3.7 Theme G: Choice overload, assortment complexity, and decision aids

### What the evidence indicates

- Large assortments can increase perceived freedom and category attraction, but can also decrease choice probability when consumers cannot construct confidence in “the right option.”
- Choice overload is more likely under:
  - low category expertise (beginners),
  - preference uncertainty (first-time flavors),
  - weak attribute structuring (many similar SKUs),
  - high stakes (ingestible, hard-to-return products).

## Representative methodologies and findings

- **Meta-analysis (choice overload):** Chernev et al. (2015) review and meta-analyze choice overload evidence, concluding that overload is not universal but depends on moderators such as preference uncertainty, decision task difficulty, and the presence of a clearly “best” option.

## CRO-relevant implications for sports nutrition

- For high-assortment supplement stores, decision aids should reduce uncertainty by:
  - goal-based entry points (muscle gain, weight management, vegan, low lactose),
  - constrained comparisons (“clear” vs “creamy” protein; isolate vs concentrate),
  - guided defaults with explicit control (users must confirm flavor/size).
- Evidence suggests the highest ROI is not “more information” but **better-structured information** that lowers task difficulty and improves confidence.

### 3.8 Theme H: Habit formation, subscriptions, and repeat purchase psychology

#### What the evidence indicates

- Sports nutrition is often routinized (daily shakes, creatine, vitamins). Repeat purchase is therefore shaped by:
  - habit formation dynamics,
  - frictionless replenishment (subscriptions, reminders),
  - avoidance of disruption (stockouts, delivery uncertainty).

#### Representative methodologies and findings

- **Longitudinal observational study (habit formation):** Lally et al. (2010) track health behavior habit formation and report that automaticity increases gradually, with a widely cited average timescale on the order of about 66 days for behaviors to reach asymptotic automaticity (with large variability across individuals and behaviors).

#### CRO-relevant implications for sports nutrition

- Subscription and replenishment features should be framed as **routine protection**:
  - control assurances (pause/skip/change),
  - reminder timing around depletion,
  - clear delivery predictability to prevent routine breaks.
- Testable hypothesis: perceived control over subscription reduces avoidance and increases attach rate without sacrificing trust.

### 3.9 Theme I: Sociodemographic and segment differences relevant to sports nutrition

#### What the evidence indicates

- Supplement use is common in athletic populations, but prevalence and motives differ by sport, sex, age, and competitive level.
- In practice, these differences translate into different friction points:
  - beginners require higher interpretability and stronger safety reassurance,
  - experienced lifters emphasize value, consistency, and macro precision,
  - consumers with dietary restrictions prioritize allergen and intolerance clarity,
  - older consumers tend to be more risk sensitive and more trust-dependent in online health-related purchases.

#### Representative methodologies and findings

- **Systematic review (supplement use in athletes):** Knapik et al. (2016) synthesize evidence on dietary supplement use prevalence in athletes, reporting that usage rates are frequently high (often a substantial minority to a majority, depending on cohort), and that motivations commonly include performance enhancement, recovery, and health maintenance.

## CRO-relevant implications for sports nutrition

- Segment-specific persuasion should not be “more hype”; it should be **differential uncertainty reduction**:
  - beginners: explainers (“what is this for?”) and safe trial paths,
  - experienced: batch consistency cues, precise nutrition panels, bulk economics,
  - dietary-restricted: prominent allergen summaries and intolerance-safe alternatives.

## 4 Evidence-to-Action Synthesis (Scientific Findings Mapped to CRO Hypotheses)

Theme	Evidence base (typical methods)	Mechanism	Testable CRO hypothesis (examples)
Trust and perceived risk (ingestibles)	Meta-analyses of online trust; experiments on risk reduction and assurance policies	Lower uncertainty; increase perceived integrity and accountability	Add a compact integrity block near purchase action: tamper-evident explanation, batch/expiry placement, and clear “if something is wrong” path → higher add-to-cart and lower checkout abandonment.
Fulfillment reliability and e-service quality	Meta-analytic reviews of e-service quality; satisfaction/loyalty models	Reliability as competence and loss avoidance	Move delivery certainty earlier (PDP and cart) with transparent windows and missing-parcel contingency explanation → higher checkout completion.
Promotions and fairness perceptions	Meta-analyses on sales promotions; experiments on scarcity framing	Deal utility versus deception inference	Automatic application and itemized savings explanation → higher conversion and fewer promo-related exits (measured via drop-off and customer support clicks).

Theme	Evidence base (typical methods)	Mechanism	Testable CRO hypothesis (examples)
Sensory expectations (taste/mixability)	Sensory expectation reviews; experiments on imagery and mental simulation	Expectation accuracy reduces disconfirmation and regret	Flavour-level sweetness and texture descriptors plus review filtering by flavour → higher add-to-cart, especially for large sizes; sample-first default → higher first-purchase conversion.
Efficacy beliefs and goal progress	Meta-analyses in sports nutrition efficacy; behavioral goal framing research	Outcome credibility and self-efficacy	Bodyweight-based serving calculator and “what this helps with” bullets → higher conversion for beginners/switchers.
eWOM and reviews	Meta-analysis of eWOM effects; credibility and diagnosticity research	Social proof as experience substitute	Attribute-cluster review snippets (taste, stomach comfort, delivery) near choice point → reduced uncertainty and faster decisions.
Choice overload and decision support	Meta-analysis on choice overload moderators	Reduce task difficulty; increase confidence	Add a short “protein finder” (clear vs creamy; goal; dietary constraints) → higher product-page to add-to-cart rate.
Habit formation and subscriptions	Longitudinal habit formation studies	Automaticity and routine protection	Subscription framed as controllable routine support (pause/skip/change) with explicit control cues → higher subscription attach without higher cancellation intent.

## 5 Optional Quantitative Visualization (Conceptual: Psychological Driver Priorities)

The following chart visualizes a **conceptual prioritization** of psychological drivers (security, comfort, progress, autonomy, curiosity, status, belonging) consistent with the evidence themes

in this report. It is not presented as primary scientific evidence; rather, it provides a compact scaffold to align experimentation roadmaps with risk sensitivity typical for ingestible e-commerce.

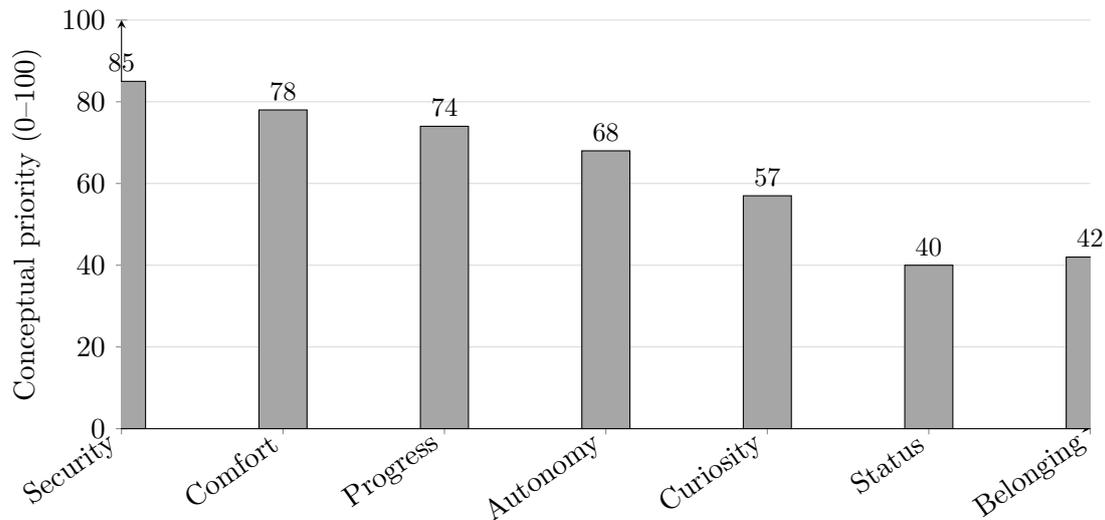


Figure 1: Conceptual driver prioritization aligned with the report’s evidence themes (trust/risk; sensory comfort; goal progress; control).

## 6 Most Important Conclusions (Evidence-Consistent and Testable)

- For DTC sports nutrition, “conversion” is often the end-product of uncertainty reduction: trust, fulfillment reliability, and sensory risk determine whether motivation becomes a purchase.
- Delivery reliability and policy clarity are not ancillary details; they are e-service quality components strongly tied to satisfaction and loyalty outcomes in e-commerce research.
- Promotions increase purchase likelihood, but the category is vulnerable to fairness and deception inferences; therefore, promo mechanisms should be auditable and low-effort.
- Taste and physiological comfort are central because the product is consumed repeatedly; sensory expectation management (sweetness, texture, mixability) functions as a retention lever and should be treated as a pre-purchase decision aid.
- Goal framing becomes more persuasive when tied to credible mechanisms and user-specific math (e.g., protein/day relative to body weight), consistent with sports nutrition efficacy evidence and behavior-change theory.
- Large assortments require structured choice architecture; meta-analytic work shows overload depends on moderators such as preference uncertainty and task difficulty, both of which are common for first-time supplement buyers.

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